JUL 20 1922

The Trend of Business—Page 165

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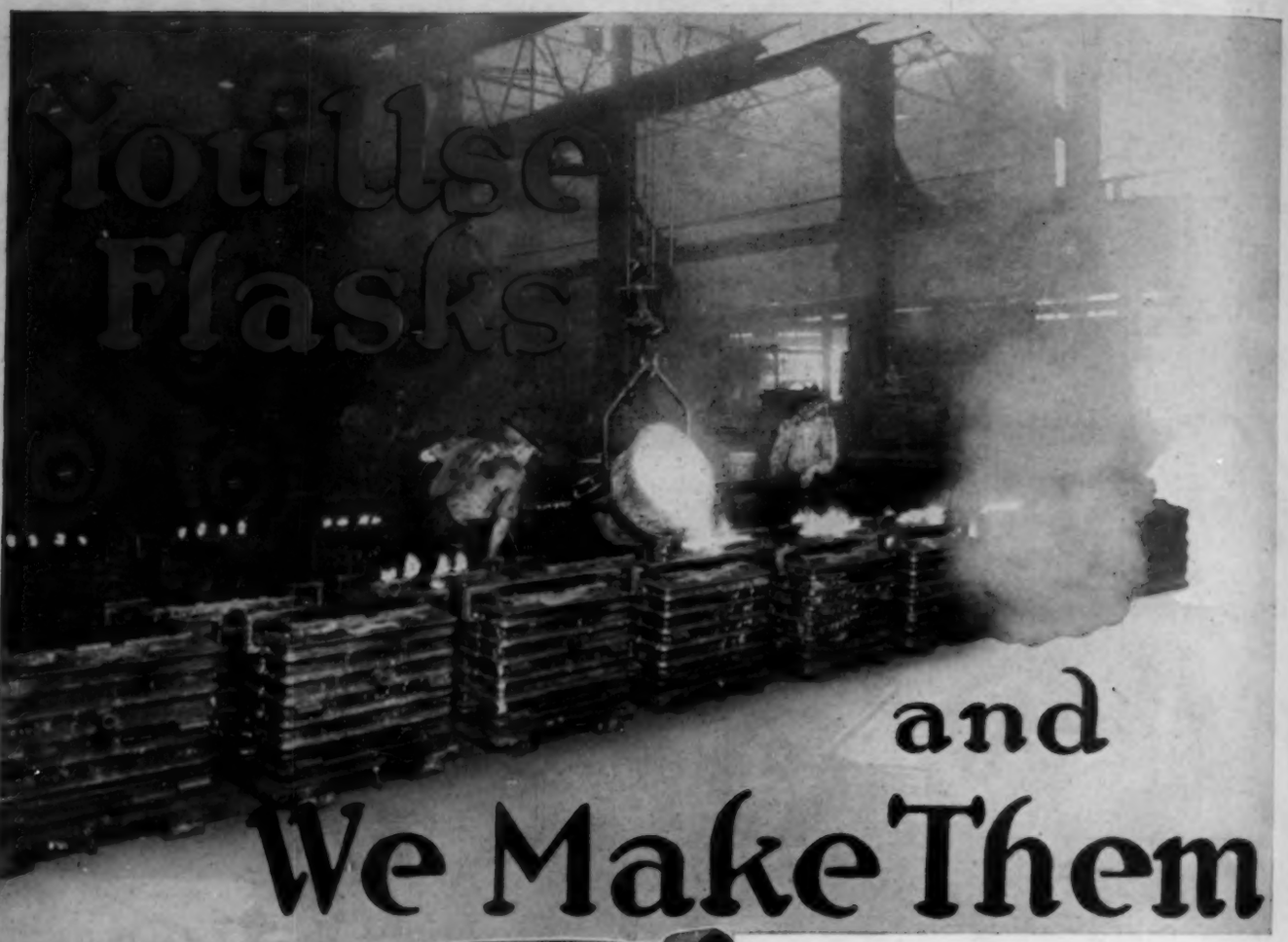

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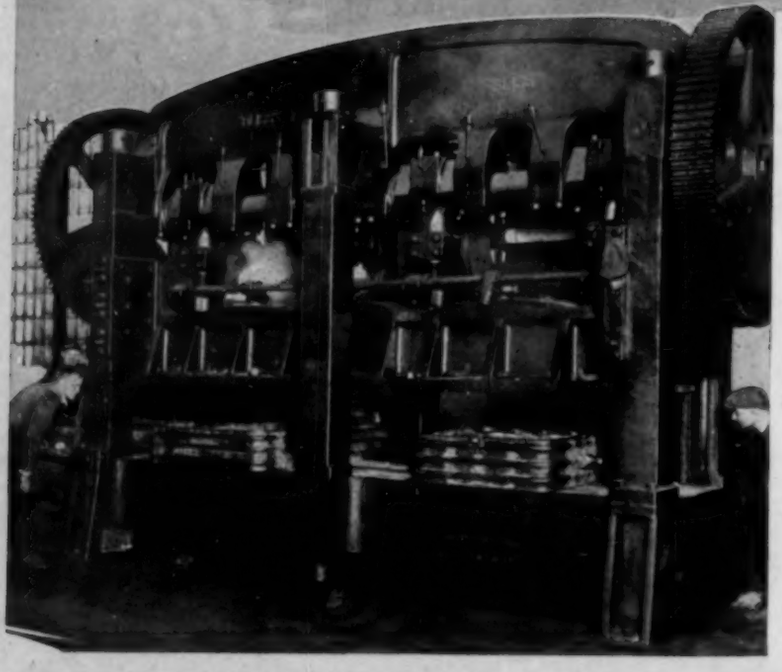

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Vol. LXXI THE IRON TRADE REVIEW No. 3
Registered U. S. Patent Office
Cleveland, July 20, 1922

Works Face Sharp Curtailment

Blast Furnaces Forced To Bank in Various Districts Because of Fuel Shortage—More Suspensions in Early Prospect—Steel Operations Less Affected—Coke Market Soars—New Business in Good Volume Despite Uncertainties

BANKING of a half dozen blast furnaces and growing interference with operations all along the line, have given the iron and steel industry a foretaste of the drastic shackling of production that will attend any prolongation of the coal and railroad strikes. The effects of the present crisis have been quickly communicated to the industry because transportation difficulties have blocked the lines of steady communication for so many plants with the nonunion coal fields in West Virginia and Kentucky especially, upon which they have been largely dependent in recent months. Every day the present situation is extended promises to multiply the scope of enforced plant cessations. The outlook is so fraught with disastrous consequences that a general belief is entertained that an early relief in some form will be brought about. The attitude of the federal government is encouraging these expectations. Shortage of labor also remains an effective check on production and doubt is expressed if full capacity could be achieved even were fuel supplies adequate.

Spot coke has become almost unobtainable and prices have soared with sales of Connellsville foundry fuel at $13 ovens. This represents an advance of $3 in the week. Demand is more feverish. Prospects of coal reaching $7 are reported from some districts.

Iron mining operations in the Lake Superior district have been curtailed by some large companies which do not wish to stock too much ore, due to the fact that lake vessels now lack coal for their own fuel purposes. This week will see the start of laying up these boats as they finish their runs.

New Tonnage Favorable

Despite the present dubious outlook, new business is being provided for the mills in good tonnage. July bookings, in fact, have been better than expected, and 75 per cent operations for the remainder of the year seem reasonably assured. The way in which the shopmen's strike has revealed the poor condition of much of the serviceable equipment has stimulated the buying by the railroads of new rolling stock, repairs, replacements, etc. The week shows about 4500 new cars and several hundred locomotives and repairs placed with an increased number of negotiations under way. The Pennsylvania railroad has placed 11,000 tons for car repair parts.

Building Is Active

Building work in June continued at a favorable rate according to the official structural steel record which shows a total of approximately 158,700 tons or 88 per cent of total capacity. This compares with 146,900 tons or 82 per cent in May and 165,900 tons or 92 per cent in April. In the metropolitan district structural steel contracts of the building type exclusively, during the first six months totaled 179,000 tons against a normal of 120,000 tons or an increase of 49 per cent. The week's reports show about 24,700 tons of new work placed.

Automobile production with some of the leading builders is being maintained surprisingly well and the expected slowing down in July and August is only in partial evidence. The Ford Motor Co. schedule for August is given as 5400 cars and 300 trucks daily and that of the Chevrolet branch at 1200 daily.

An unchanged figure $37.45 for 14 iron and steel products is shown by THE IRON TRADE REVIEW composite this week. Two weeks ago the average was $37.43, for all June $36.96 and for July 1913, $26.34.

Marine work is assuming more importance. The Newport News builder has taken two vessels requiring 4500 tons and a San Francisco yard, an oil tanker. Another freighter of the smaller type has been placed on the lakes. Orders and inquiries for miscellaneous craft are more numerous.

Pipe Plants Buy Iron

Outstanding in the pig iron market are the recent heavy transactions in southern iron closed by leading cast iron pipe makers, aggregating 75,000 to 100,000 tons. The largest part of the tonnage was placed by the United States Cast Iron Pipe & Foundry Co. and it went to the Ensley maker. Two other southern pipe interests purchased about 20,000 tons and two Virginia shops each 12,000. A lot of 2000 tons of Nova Scotia iron was received by water shipment this week by the leading pipe foundry interest. Where a resale lot of valley basic last week went at $24, nothing under $25 now is quoted. An Iowa melter is inquiring for 10,000 tons of basic.

Business Trend and Chart Section Page 165

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Surplus Fixes Basing Point

IN SPITE of contentions to the contrary, recent market developments tend to establish the truth of the claim that Pittsburgh is the natural basing point of steel prices. This claim is based on the preponderance of production there, as compared with consuming power of that region.

In the pending action before the federal trade commission steel companies repeatedly have asserted that until the Chicago district builds sufficient production to care for the needs of consumers naturally tributary to it, the practice of selling on a Pittsburgh base with freight added is simply a matter of supply and demand.

During the slump in buying a few months ago considerations of competition caused Chicago mills to abandon the so-called Pittsburgh plus practice and to quote on a Chicago base. This was to protect their home market against selling by mills in the Pittsburgh and farther eastern districts. Thus simple competition brought about a double base.

As Chicago mills have filled their books, while mills to the eastward still are seeking business, quotations at Chicago have risen relative to Pittsburgh prices until a portion of the freight differential from Pittsburgh to Chicago has been included in the western price. Not yet have competitive conditions reached the point, however, where plates, shapes and bars are being quoted with the full freight added. Every indication is that when books are opened for 1923 the full Pittsburgh freight will be included in Chicago quotations.

That this is simply a reflection of the relation of production and consumption is evident from the situation in steel sheets. Only a small proportion of the demand for sheets in the Chicago district can be met by western mills. Less production of sheets in proportion to consumption is being carried on in Chicago territory than of any other finished steel product. At no time has the quotation on sheets been less than the Pittsburgh base with full freight to Chicago added. Sufficient preponderance of demand over supply has existed at all times to make this quotation possible competitively and Pittsburgh plus has been the rule throughout both dull and active periods.

Although quotations by Chicago mills now do not carry the added freight from Pittsburgh, the Chicago market from the viewpoint of the consumer, actually is on a Pittsburgh base. Since western mills are sold out for three to six months consumers buying steel beyond their present contracts can obtain it only from mills in the East and no question is being raised as to the freight charge.

Thus the operation of simple business laws has restored in actual practice the custom of which complaint is being made before the federal trade commission.

An interesting parallel may be found in the present pig iron situation, in which Birmingham in effect, is the basing point for pig iron in many northern localities. With the freight rate from that center reduced considerably, and production there much greater than can be consumed in the South, the price of northern iron is held practically to Birmingham plus. This is because a higher price quoted by northern producers than that asked for southern iron would tend to divert the business to the latter. When southern sellers advance from the present level, northern furnaces also can elevate their prices equally and remain in a competitive position.

Rolling Methods Are Advancing

FOR many years the manual doubling of black sheets was considered a necessary evil in the making of tin plate. In recent years mechanical doublers have been introduced and now it may be said that their efficiency is rapidly being recognized by tin plate manufacturers.

While the development of the mechanical doubler is important from the standpoint of the conservation of man power, it also is significant because it paves the way for a new scheme of rolling. This phase of

the tin plate problem is discussed in an article appearing elsewhere in this issue. Most of the black plate made in this country is rolled on a single mill by the 4-part system—that is, four heatings are required to work the steel from the sheet bar to the finished plate. Twice during the rolling process the stock is doubled and if sufficient heat is not retained by the steel at the time of the doubling operation the workman, known as the doubler, encounters considerable difficulty in making the fold. In fact, doubling the sheets by hand is perhaps the most arduous duty entailed in the rolling of black plate. But with a mechanical doubler installed between the heating furnaces and the rolls the steel can be given the same number of passes with one less reheating and it makes little difference whether the sheets are cold or hot when ready to be folded because the doubling machine functions in either case.

Production can be increased further by employing double equipment, consisting of two furnaces each for heating the pairs and reheating the sheets, two stands of rolls and two mechanical doublers. In this event the sheet bars are roughed down on the first stand of rolls and finished on the second stand, the steel being heated but once in the same furnace. This method, known as the double mill 3-part system, eliminates the backtracking associated with the single mill 4-part system and is the most successful attempt yet made to roll black plate continuously. Operating a double mill on the 3-part system requires the same number of workmen that otherwise would be necessary if the mills were operated singly but the aggregate wage is considerable less because many of the positions on the crew requiring skilled labor can be substituted by common labor.

In view of the keen competition and the growing scarcity of hot mill labor, particularly matchers and doublers, now existing in the tin plate industry, makers will do well to investigate the method of rolling their product by the double mill 3-part system. The heats can be finished off faster by reason of the fact that one heating is eliminated and, consequently, the system affords larger production. Moreover, it seldom is necessary for a maker to scour other districts for workmen to perform the matching and doubling operations, both of which are accomplished by mechanical means under the double mill system. Lastly, the double mill 3-part system effects a saving conservatively estimated at 15 cents a base box of tin plate.

Rolling Methods Analyzed

Recent Technical Developments in Tin Plate Industry Interpreted for Readers

SO MUCH has been said about the severe strain of hard work and long hours in the steel industry, that the introduction of a machine which eliminates a particularly difficult manual operation attracts an unusual amount of attention. This was the case several years ago when the mechanical doubler was introduced.

However, the story of the doubler is not half told. True, the machine does away with the back-breaking task of doubling by hand, but of even more importance is the fact that it opens up the way for an economical plan of rolling, in which the number of heats is reduced, the output greatly increased, and backtracking and confusion eliminated.

The possibilities for improvement in rolling are discussed in a timely and original articles on page 179 of this issue. Readers of THE IRON TRADE REVIEW will be interested in this analysis, not only because of its revelations regarding labor saving, but more particularly because it is the only authoritative article in which the important recent developments in black plate rolling are described and their significance interpreted on an economic basis. Copies of the chart on page 178, showing in schematic form the three methods of rolling, gladly will be sent to readers upon application to the editor.

Pig Iron Gain Near Record

WITH the remarkable increase in pig iron production in June, the curve of output marked the eleventh consecutive month of unbroken improvement. This record has been maintained in spite of the coal strike which has caused some blast furnaces to bank and has exerted a constant threatening influence over many others. In most cases, however, coke supplies have been sufficient not only to continue but to expand operations to meet the demand for iron and steel.

A study of blast furnace statistics shows the present situation has few parallels. After reaching the lowest production level in history last July, eleven straight months of gain have been maintained. At the low point the country's output represented but 24.8 per cent of the high record of October, 1918. During June average daily production represented almost 70 per cent of the peak rate. During the past eleven months, the output was almost tripled. Beginning with January, 1915, pig iron production established 12 consecutive months of improvement. This stands as the longest continuous gain on record. During that period the tonnage was doubled.

Under prevailing strike conditions, however, it is uncertain whether iron production in July will show a gain over June. Should a gain be made, the twelfth consecutive month of increase will be recorded and the 1915 record equaled. During the present month, production will be augmented by the 16 additional blast furnaces which became active in June but already some furnaces have banked and others are expecting to be idle temporarily from the combined effects of the coal and rail strikes. Should early settlements of these strikes be effected, as now seems likely, this would act as a further stimulus to greater production.

Composite Market Average

Representing the Combined Average Prices per Ton of Fourteen Leading Iron and Steel Products, Yesterday, One Week, One Month, Three Months, One Year and Nine Years Ago

July 19, 1922	July 12, 1922	June, 1922	April, 1922	July, 1921	July, 1913
$37.45	$37.45	$36.96	$34.42	$38.14	$26.34

Products Included Are Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe

Composite Market Record by Months for Nine Years on Page 206

SCRAP PRICES, PAGE 204, WAREHOUSE, ORE, NUTS, BOLTS AND RIVETS AND PIPE PRICES, PAGE 200

Iron and Steel Prices

Pig Iron

Bessemer, valley	$25.00
Bessemer, Pittsburgh	26.76
Basic, valley	25.00
Basic, Pittsburgh	26.76
Basic, Buffalo	24.00 to 25.00
Basic del., eastern Pa.	25.75 to 26.25
Malleable, valley	25.00
Malleable, Pittsburgh	26.76
Malleable, Chicago	24.00 to 25.00
Malleable, Buffalo, furnace	24.00 to 24.50
Malleable, del., eastern Pa.	27.25 to 28.25

FOUNDRY IRON SILICONS

No. 2 Northern	1.75 to 2.25
No. 2 Southern foundry	1.75 to 2.25
No. 2X East'n and Virginia	2.25 to 2.75
No. 1X Eastern	2.75 to 3.25
No. 1 Chicago	2.25 to 2.75
No. 2 foundry Eastern	1.75 to 2.25

No. 1X, eastern del. Phila.	28.63 to 30.26
No. 1X, Buffalo	25.00 to 26.00
No. 2 foundry, valley	24.00 to 25.00
No. 2 foundry, Pittsburgh	25.76 to 26.76
No. 2 foundry, Buffalo	24.00 to 25.00
No. 2 foundry, Chicago	24.00 to 25.00
No. 2 foundry, Granite City	25.50 to 26.50
No. 2 foundry, Ironton furnace	24.00
No. 2 foundry, Cleveland del.	24.50
No. 2 foundry, del., Phila.	26.13 to 27.26
No. 2 foundry, N. J. tidewater	26.63 to 28.14
No. 2X, eastern del. Phila.	27.13 to 28.26
No. 2X, east. N. J. tidewater	27.63 to 29.14
No. 2X, eastern del. Boston	29.06 to 30.06
No. 2X, foundry, Buffalo fur.	24.50 to 25.50
No. 2X, Buffalo del. Boston	30.41 to 31.41
No. 2 southern, Birmingham	18.50 to 19.00
No. 2 southern, Cincinnati	22.55 to 23.05
No. 2 southern, Chicago	24.50 to 26.00
No. 2 southern, Philadelphia	24.31 to 24.81
No. 2 southern, Cleveland	24.50 to 25.00
No. 2 southern, Boston	28.65 to 30.15
No. 2 southern, St. Louis	23.67 to 25.17
No. 2X, Virginia furnace	25.50 to 26.50
No. 2X, Virginia Philadelphia	30.67 to 31.67
No. 2X, Virginia Jersey City	31.04 to 32.04
No. 2X, Virginia Boston	31.42 to 32.42
Gray forge, eastern Pa.	25.50 to 27.50
Gray forge, val. del. Pitts.	25.76
Low phos., standard, valley	33.00 to 34.00
Low phos., standard, Phila.	34.79 to 36.79
Low phos., Lebanon furnace	30.00
Charcoal, Birmingham	30.00 to 32.00
Charcoal, Superior, Chicago	31.65

Silvery Iron
8 per cent base

Jackson county, O., furnace	32.50
Tennessee, Chicago delivery	Nominal
Ohio brands, Chicago	37.29

Bessemer Ferrosilicon
Jackson County, Ohio, furnace

10 per cent	41.50
11 per cent	44.80
12 per cent	48.10
13 per cent	52.10
14 per cent	57.10

Ferroalloys

Ferromanganese, delivered, Pittsburgh	$72.29 to 79.79
Ferromanganese, 80 per cent, English, c.i.f. Atlantic port	67.50 to 75.00
Ferromanganese, 80 per cent, German, c.i.f. Atlantic port	66.00
Spiegel, 19 to 21 per cent furnace spot nominal	35.00 to 36.00
Spiegel, 20 per cent English, c.i.f. Atlantic port	37.75
Ferrosilicon, 50 per cent contract freight allowed	57.00 to 60.00
Ferrotungsten, standard, per pound contained	40.00c to 45.00c
Ferrochrome, 60 to 70 chromium, 4 to 6 carbon, per pound contained, makers plant	11.50c to 12.00c
Imported ferrochrome, 4 to 6 per cent carbon	10.00c to 10.50c
Ferrovanadium, 30 to 40 per cent per pound estimated, according to analysis	$3.50 to $4.00
Ferro carbon-titanium, carloads, producers plant, per net ton	$200.00

Coke

Beehive, Ovens

Connellsville furnace	$12.00 to 12.50
Connellsville foundry	13.00 to 13.50
Pocahontas furnace	5.00 to 6.00
Pocahontas foundry	6.00 to 7.00
New River furnace	6.50 to 7.50
New River foundry	8.00
Wise county furnace	6.00 to 6.50
Wise county foundry	7.00
Alabama furnace	4.50 to 5.00
Alabama foundry	5.50 to 6.00

By-Product

Foundry, Newark, N. J., del.	$11.84 to 13.02
Foundry, Chicago, ovens	11.25
Foundry, Boston, delivered	13.50
Foundry, Granite City, Ill., ovens	9.00

Semifinished Material

BILLETS AND BLOOMS
(4 x 4-inch)

Open-hearth, Pittsburgh	$35.00
Open-hearth, Youngstown	35.00
Open-hearth, Philadelphia	40.17 to 42.17
Bessemer, Pittsburgh	35.00
Bessemer, Youngstown	35.00
Forging, Pittsburgh	40.00 to 45.00
Forging, Philadelphia	45.17 to 47.17

SHEET BARS

Open-hearth, Pittsburgh	$35.00
Open-hearth, Youngstown	35.00
Bessemer, Pittsburgh	35.00
Bessemer, Youngstown	35.00

SLABS

Pittsburgh and Youngstown	$35.00

WIRE RODS AND SKELP

Wire rods, Pittsburgh	$40.00 to 43.00
Grooved skelp, Pittsburgh	1.60c to 1.90c
Universal skelp, Pittsburgh	1.70c to 2.00c
Sheared skelp, Pittsburgh	1.70c to 2.00c

Shapes, Plates and Bars

Structural shapes, Pittsburgh	1.60c to 1.80c
Structural shapes, Phila.	1.925c to 2.325c
Structural shapes, New York	1.94c to 2.34c
Structural shapes, Chicago	1.75c to 1.85c
Tank plates, Pittsburgh	1.60c to 1.80c
Tank plates, Philadelphia	1.925c to 2.275c
Tank plates, New York	1.94c to 2.29c
Tank plates, Chicago	1.75c to 1.85c
Bars, soft steel, Pittsburgh	1.60c to 1.80c
Bars, soft steel, Philadelphia	1.925c to 2.125c
Bars, soft steel, New York	1.94c to 2.14c
Bars, soft steel, Chicago	1.75c to 1.85c
Bars, hard steel, Chicago	1.70c
Reinforcing bars, Pittsburgh	1.60c to 1.80c
Bar iron, common, Phila.	1.925c to 2.125c
Bar iron, common, New York	1.94c to 2.14c
Bar iron, common, Chicago	1.80c to 1.85c

Hoops, Bands, Shafting

Hoops, Pittsburgh	2.50c to 2.75c
Bands, Pittsburgh	2.50c to 2.75c
Cotton ties, per bundle Pittsburgh	$1.10
Cold finished steel bars, Pittsburgh base	2.10c to 2.25c

Rails, Track Material

Standard bessemer rails, mill	$40.00
Standard open hearth rails, mill	40.00
Relaying rails, St. Louis	23.00 to 28.00
Relaying rails, Pittsburgh	24.00 to 27.00
Light rails, 25 to 45, mill	1.75c
Angle bars, Chicago base	2.40c
Spikes, railroad, Pittsburgh	2.25c to 2.35c
Spikes, small and boat	2.50c to 2.60c
Spikes, railroad, Chicago	2.50c to 2.70c
Track bolts, Pittsburgh	3.00c to 3.50c
Track bolts, Chicago	3.50c to 3.70c
Tie plates, Pittsburgh	2.00c to 2.25c
Tie plates, Chicago	1.85c to 2.00c

Wire Products

100 lbs. to Jobbers in Carloads

Wire nails, Pittsburgh	2.40c to 2.50c
Plain wire, Pittsburgh	2.25c
Galvanized wire, Pittsburgh	2.75c
Barbed wire, painted, Pitts.	2.50c to 2.65c
Barbed wire, galv., Pittsburgh	3.05c to 3.15c
Polished staples, Pittsburgh	2.55c to 2.65c
Galvanized staples, Pittsburgh	3.05c to 3.15c
Coated nails, count keg, Pitts.	1.90c to 2.00c

Chain, Piling, Strip Steel

Chain, 1-in. proof coil, Pitts.	5.50c
Sheet piling base, Pittsburgh	1.65c to 1.85c
Hot rolled strip steel, Pittsburgh stamping quality	2.50c to 2.75c
Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100-inch and heavier, base	4.00c to 4.25c

Sheets

SHEET MILL BLACK

No. 28, open-hearth, Pittsburgh	3.15c to 3.40c
No. 28, bessemer, Pittsburgh	3.15c to 3.40c
No. 28, open-hearth, Phila.	3.475c to 3.625c
No. 28, open-hearth, Chicago	3.49c to 3.64c

TIN MILL BLACK

No. 28, open-hearth, Pittsburgh	3.15c
No. 28, open-hearth, Chicago	3.49c

GALVANIZED

No. 28, open-hearth, Pittsburgh	4.15c to 4.40c
No. 28, bessemer, Pittsburgh	4.15c to 4.40c
No. 28, open-hearth, Phila.	4.475c to 4.625c
No. 28, open-hearth, Chicago	4.49c to 4.64c

BLUE ANNEALED

No. 10, open-hearth, Pittsburgh	2.40c to 2.65c
No. 10, bessemer, Pittsburgh	2.40c to 2.65c
No. 10, open-hearth, Phila.	2.725c to 2.925c
No. 10, open-hearth, Chicago	2.74c to 2.84c

Tin Plate

Per 100 lb. box.

Tin plate, coke base, Pitts.	$4.75

Iron and Steel Pipe

Base Discounts Pittsburgh to Jobbers in Carloads

	Black	Galv
1 to 3-inch, butt steel	71	58½
1 to 1½-inch, butt iron	44½	29½

Boiler Tubes

Carload Discount 4 Points Larger

Steel, 3¼ to 13 inches, l. c. l.	53 off
Charcoal iron, 3½ to 4½ inches, l. c. l.	28 off
Seamless, 3¼ to 4-inch, l. c. l.	48 off

Cast Iron Water Pipe

Class B Pipe

Four-inch, Chicago	$49.20
Six inch and over, Chicago	45.20
Four-inch, New York	58.30
Six-inch and over, New York	53.30
Four-inch, Birmingham	41.50 to 42.00
Six-inch and over, Birmingham	37.00 to 37.50
Three-inch, Birmingham	50.50 to 51.00

Class A pipe is $4 higher than Class B. Standard fittings, Birmingham, base, $100.00 6 to 24-inch, base; over 24-inch, plus $20; 4-inch, plus $20; 3-inch, plus $20; gas pipe fittings, $5 higher.

Prices Present and Past

Representative market figures yesterday, one month ago, three months ago and one year ago

	July 19, 1922	June 1922	April 1922	July 1921
PIG IRON				
Bessemer, valley, del., Pittsburgh.	$26.76	$26.96	$22.46	$22.96
Basic, valley, del., Pittsburgh....	26.76	26.96	22.21	20.81
No. 2 foundry, del., Pittsburgh..	25.96	25.96	22.31	22.06
No. 2 foundry, Chicago.....	24.50	23.25	20.50	19.35
Lake Superior charcoal, Chicago..	31.65	30.00	26.50	36.85
Malleable, valley	24.00	24.20	20.25	20.40
Malleable, Chicago	24.50	23.25	20.50	19.35
*Southern No. 2, Birmingham....	18.50	18.50	16.00	20.25
*Southern Ohio, No. 2 Ironton..	24.00	23.25	20.30	20.50
Basic eastern del., eastern Pa....	26.00	25.25	21.70	22.25
**No. 2X, Virginia furnace.....	26.00	24.50	22.60	24.50
**No. 2X, eastern del. Phila.....	27.64	27.20	23.60	23.50
Gray forge val. del., Pittsburgh..	25.76	25.96	21.96	20.61
Ferromanganese, del., Pittsburgh	72.29	72.82	69.07	75.00
SEMIFINISHED MATERIAL—				
Sheet bars, bessemer, Pittsburgh.	35.00	35.00	31.50	34.00
Sheet bars, open-hearth, Pittsburgh	35.00	35.00	31.50	34.00
Billets, bessemer, Pittsburgh....	35.00	35.00	30.10	32.25
Billets, open-hearth, Pittsburgh...	35.00	35.00	30.10	32.25
FINISHED MATERIAL—				
Steel bars, Pittsburgh.....	1.70	1.65	1.50	1.85
Steel bars, Chicago.....	1.75	1.75	1.60	2.28
Steel bars, Philadelphia	2.025	2.01	1.91	2.15

*1.75 to 2.25 silicon

	July 19, 1922	June 1923	April 1922	July 1921
FINISHED MATERIAL Continued				
Iron bars, Philadelphia.....	$2.05	$1.96	$1.86	$2.15
Iron bars, Chicago mill.....	1.80c	1.74	1.63	1.96
Beams, Pittsburgh	1.70	1.65	1.50	1.90
Beams, Philadelphia	2.025	2.01	1.91	2.15
Beams, Chicago	1.75	1.75	1.60	2.33
Tank plates, Pittsburgh.....	1.70	1.65	1.50	1.85
Tank plates, Chicago.....	1.75	1.75	1.63	2.33
Tank plates, Philadelphia	2.025	2.01	1.91	2.15
Sheets, blk., No. 28, Pittsburgh..	3.15	3.15	3.10	3.35
Sheets, blue anl., No. 10, Pitts..	2.40	2.40	2.35	2.55
Sheets, galv., No. 28, Pittsburgh..	4.15	4.15	4.10	4.35
Wire nails, Pittsburgh.....	2.40	2.40	2.40	2.80
COKE—				
Connellsville furnace, ovens.....	12.00	6.60	4.30	2.75
Connellsville foundry, ovens.....	13.00	7.20	4.95	4.45
OLD MATERIAL—				
Heavy melting steel, Pittsburgh..	16.50	17.40	16.35	12.00
Heavy melting steel, eastern, Pa.	15.00	15.30	14.35	11.25
Heavy melting steel, Chicago....	15.00	14.45	13.55	10.55
No. 1 wrought, eastern Pa.....	18.25	17.50	15.85	14.75
No. 1 wrought, Chicago.....	15.25	14.20	13.25	10.25
Rerolling rails, Chicago.....	16.00	15.40	14.25	12.45

**2.25 to 2.75 silicon

Pipe Foundries Buy Iron Heavily

At Least 75,000 to 100,000 Tons Estimated Placed with Alabama Furnaces by Four or Five Shops—2000 Tons of Nova Scotia Iron Taken—Buyers and Sellers Cautious Under Prevailing Conditions

Philadelphia, July 18.—A crisis rapidly is developing in eastern pig iron production due to the joint effects of the coal and railroad strikes, principally the former on by-product coke output. As a result a number of the furnaces are banking or will bank soon. Some furnaces, therefore, hesitate to accept further pig iron tonnage. Despite this situation and the prevailing high prices of coke, iron prices display less strength in some directions. Where $25 base furnace was the exceptional price on foundry iron, it is now more frequent. The current market on eastern Pennsylvania and New Jersey foundry iron is $25 to $26.50, furnace for No. 2 plain (1.75 to 2.25 silicon), $26 to $27.50 for No. 2X (2.25 to 2.75 silicon) and $27.50 to $29.50 for No. 1X. The Pennsylvania railroad is inquiring for 900 to 1500 tons of foundry iron for fourth quarter. Other smaller inquiries are out. Sales of about 3000 tons of copper-bearing low phosphorus iron have been closed at $30 furnace with a disposition shown in some quarters to advance. A moderate tonnage of basic was sold at $25 to $26.50 furnace. The leading pipemaker has just received a cargo of 2000 tons of foundry iron from Sydney, Nova Scotia at its Burlington, N. J. dock and is inquiring for 2000 tons for Scottdale, Pa. At least 12,000 tons of Alabama foundry iron was bought by two Virginia pipemakers during the past two weeks. Small lots of Alabama iron have been sold here at $18 to $20, base Birmingham. It is reported leading pipemakers recently bought a huge tonnage of Alabama iron. Gray forge is nominal at $25.

Spot Iron in Demand

Chicago, July 18.—The delayed movement of freight on account of the strike is creating a new spot demand for pig iron. Premiums of 50 cents and $1 are being asked for spot delivery. Individual sales are smaller. The most prominent inquiry is for 1500 tons of southern iron for prompt shipment to Illinois consumers. The Sloss-Sheffield Steel & Iron Co. effective Tuesday advanced its price to $18.50, base, Birmingham. Sales include 300 tons of 275 silicon to a Michigan foundry and 200 tons of charcoal at approximately $31 to Wisconsin consumers. Northern interests practically are out of the market on irons containing silicon above 2.25. The Thomas Furnace Co., Milwaukee, has backlog sufficient to resume operations. The fuel situation alone hinders the start of this furnace. The new low freight rates from Birmingham to Ohio river points effective in about 30 days average about $1 reduction and are disappointing to northern furnaces. The new rates from Birmingham are as follows: Cincinnati $3.53; Evansville $3.53; Louisville $3.34; St. Louis $4.32. Silveries and low phosphorus are unchanged in price and in demand. Freight conditions constantly are growing more serious in this district due to the railroad strike.

Supply Scarce, Market Strong

Pittsburgh, July 18.—Pig iron supplies are growing increasingly scarce and a serious shortage is threatened. This condition has been augmented

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during the past day or two by more blast furnaces being banked or blown out while others are expected to go out of commission within the next few days. While a steel company was able to purchase 2000 tons of basic pig iron a week ago from another interest through a middleman at $24, valley, this is not possible today. The absolute minimum on that grade has returned to $25, valley, and users are having difficulty in obtaining even that figure. Before the week is out higher quotations are expected since costs are advancing every moment. The Follansbee Brothers Co. is inquiring for 5000 tons of basic. An inquiry is out for 1500 tons of bessemer but no sales exceeding a carload or two at a time at $25, valley, are noted. Considerable "under the surface" demand exists. Prominent sellers know of at least four consumers in this territory who would close on 5000 tons in a moment were such tonnages available. Because they know they are not, no formal inquiries are being issued. In connection with foundry iron, sales up to 200 tons each at a time at $24, valley, continue to be noted although in this grade as well, strength is manifesting itself and the indications are $25 soon will be the firm minimum. The Westinghouse Electric & Mfg. Co. is in the market for 550 tons, 750 tons and 200 tons of assorted grades of foundry iron for Trafford City, Pa., Cleveland and Springfield respectively. The Pennsylvania railroad is in the market for 1500 tons for Altoona, Pa. stock and the General Electric Co. wants a tonnage of high silicon iron for Erie, Pa. A sale of a small lot of high sulphur iron to a nearby melter is noted this week at $25, valley. Malleable is quoted at the same level but no inquiries are noted. Gray forge and low phosphorus copper-free iron still are quoted at $24 and $34, respectively.

Pipe Plants Buy Heavily

Birmingham, Ala., July 18.—Recent heavy sales to southern iron pipe interests have featured the pig iron market. It is understood the Tennessee Coal, Iron & Railroad Co. in addition to 50,000 tons recently sold to the United States Cast Iron Pipe & Foundry Co. has taken about 30,000 tons additional from that consumer. The melt of the latter has been increased by the starting of the North Birmingham plant where the De Lavaud process of production has been installed. The American Cast Iron Pipe Co. and the National Cast Iron Pipe Co. both have been in the market and purchases by them are estimated at more than 20,000 tons. The American Radiator Co. has been a purchaser of some tonnage in this district. The Sloss-Sheffield Steel & Iron Co. sold upwards of 20 000 tons of iron during the first half of the month. Other producers willing to accept business for the third quarter have booked some tonnage. Prices range from $18.50 to $20, Birmingham, for No. 2 foundry although it is understood in some cases recently, $18 has been accepted. The Alabama company is out of the market for third quarter and has sold a considerable portion of its probable make for the fourth quarter. Production of iron in this district has been increased

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by the blowing in of one of the Robertstown furnaces at Bessemer of the Tennessee Coal, Iron & Railroad Co. on foundry iron.

Withdraw From Market

Cleveland, July 18.—Uncertainties with regard to the fuel and railroad situation have caused the northern Ohio blast furnace operators to move cautiously and two of them are definitely out of the market. All interests are encountering difficulties in operating. The Cherry Valley furnace of M. A. Hanna & Co., at Lectonia, O., probably will be blown out this week, advantage being taken of the shutdown for relining. The same interest's furnace at Dover, O., may be shut down Aug. 1. Scarcity of fuel is affecting operations of the Cleveland-Cliffs Iron Co. and the Trumbull Cliffs furnace at Warren, O has suspended. Additional suspensions by other furnaces are anticipated within a week or 10 days unless the situation clears quickly. One of the lake furnaces remaining in the market booked around 10,000 tons during the week and continues to experience an active demand. Prices show a stronger tendency. A local producer advanced all its quotations 50 cents this week sales in outlying districts to the west now being made at $23.50 to $24, base, and from western Pennsylvania, at $25, base. This interest also is practically out of the market, having nothing for spot shipment. A fourth interest still adheres to $24, base, for shipments in and out of Cleveland. A sale of 300 to 400 tons of the base grade was made last week in Cleveland by one interest, which since has withdrawn, at $24.50 furnace, and another sale of several hundred tons near Cleveland at $25, furnace. The General Electric Co. for some time has been sending inquiries regularly to northern Ohio furnaces, each day bringing requests for quotations on small lots. Two furnace companies booked several thousand tons collectively for this consumer. Three 1000-ton lots of iron were sold in the week to Indiana melters and two 1000-ton lots in Michigan. The sales of one interest to the General Electric Co. for delivery to the company's Erie, Pa., plant totaled 2000 tons, at $24 to $25 western Pennsylvania furnace. A round tonnage of No. 3 foundry iron was sold for delivery in northern Ohio at $25, furnace. The furnaces have encountered little difficulty thus far in making shipments. Some of the iron now going forward was purchased by the consumers as low as $18. Some interest is noted in the market for basic, especially from the Pittsburgh district, and inquiry is said to be current for several lots including one for 5000 tons.

Furnaces Sell Cautiously

Boston, July 18.—Increasing caution on the part of furnaces has apparently prompted pig iron buyers to close some orders in the New England district the past week but nothing large has been passed in this locality. Foundrymen are showing no disposition to contract for the fourth quarter until the coal strike is settled. Most are well stocked for the third quarter. Sales during the past week included two lots of Buffalo iron aggregating 350 tons at $25 for No. 2X, the equivalent of $29.91, delivered Boston. Three or four small sales aggregating 500 tons of eastern Pennsylvania iron have been made at $27 base, $28 for No. 2X and $30 for No. IX. A carload of No. 1X was sold at $27.50, eastern Pennsylvania, also. Heretofore $1 has been the maximum spread, with 50 cents the more common differential. The furnace quoting these prices withdrew them the next day. While the 2200-ton General Electric Co. inquiry has not yet been fully closed, so far as is known, it is thought about 1000 tons was taken by Buffalo furnaces. The supposition is the balance will be supplied by eastern Pennsylvania and southern furnaces. Some 400 tons of French iron has been delivered through the port of Boston. The market for this iron ranges from $22.50 to $23.50, Boston, depending on the silicon. Current weakness in French exchange may modify this before long.

Some Tonnages Closed

New York, July 18.—Several good sized transactions have featured the pig iron market in this district during the past week. A Connecticut interest bought 3000 tons of malleable at a price understood to have been $24 Buffalo. A New York state electrical manufacturer bought about 2600 tons of high silicon iron for shipment to four of its plants and the same interest now is inquiring for 1100 tons of foundry for delivery at Elmira, N. Y. Otherwise, the volume of business is not heavy. In fact, it is believed that the total business in this district during the past week, including the two larger transactions, did not exceeed 10,000 tons. Several inquiries are pending, one of which involves 500 tons of 4 to 5 per cent silicon for a New Jersey consumer. Current prices are unchanged. The Buffalo minimum now appears to be $24 furnace, for 1.75 to 2.25 silicon, plus 50-cent differentials and in some cases higher prices are being done. Eastern Pennsylvania and New Jersey foundry iron continues to be quoted at $25 to $26 furnace, for 1.75 to 2.25 silicon, plus differentials of 50 cents to $1 for 2.25 to 2.75 silicon and $1 for 2.75 to 3.25 silicon. The base prices quoted on eastern Pennsylvania and New Jersey iron to some extent depend on the freight rate to destination. Sales of 500 to 1000 tons of Alabama foundry have been made in this district at $18 and $18.50 base Birmingham.

Buffalo Market Is Steady

Buffalo, July 18.—The $24 price still is being quoted generally for foundry iron of the No. 2 plain grade, 1.75 to 2.25 silicon. Business has been light during the past week with no large inquiries. Out of an aggregate inquiry of 5000 tons, the largest individual lot was 750 tons. Placement was about 5000 tons in all, one seller taking between 2000 and 2500 tons. One maker reports its price range on iron from No. 2 plain grade to above 4 per cent silicon grade at $24 to $27.

Malleable is being quoted at $24, furnace.

New Buying Is Light

Cincinnati, July 17.—A noticeable lack of buying demand and inquiry in the pig iron market is apparent in this district. The lack of available tonnage, however, is maintaining prices. Southern Ohio furnaces are holding to $24 as the minimum price and southern furnaces are quoting at the wide range of $18.50 to $20, Birmingham base. One or two Alabama furnaces recently have booked some prompt orders at $18 and this price prabably could be done today on attractive tonnages. Most of the iron for which consumers have placed orders this week has been in lots ranging from one carload to 200 tons although a local seller of southern iron closed three transactions involving a good aggregate tonnage, the price and destinations of which were not reported. An order has been placed by an agricultural implement manufacturer at Springfield, O., for 100 tons of malleable and another Springfield melter bought 150 tons of No. 2 foundry. Two lots of 100 tons each and one carload were taken by Dayton consumers and 200 tons of northern foundry, 1.75 to 2.25 silicon, by a Columbus melter. Four Cincinnati foundry melters bought a carload each and a probable aggregate of 600 tons made up other scattering individual orders. Kindred tonnages are represented by current inquiries.

Shipments Are Urged

St. Louis, July 17.—While actual buying of pig iron has subsided as compared with recent weeks, a marked interest in shipments continues. The melt during the first half of July indicates a fair gain over the corresponding period in May, and is much heavier than at the same time last year. Interests with iron under contract are requesting expedition on shipments, and in many instances are anticipating quotas. This fact, coupled with numerous small filling-in orders, indicate the plants are in need of supplies, and that a number have underestimated their requirements. In a majority of cases the furnaces are sold up, and are not seeking new business. There is noticeable scarcity of grades high in silicon.

The largest single inquiry is from an Iowa melter for 10,000 tons of basic for prompt shipment. A melter in Birmingham is inquiring here for 1000 tons, with a special manganese content. Otherwise the demand centers in lots ranging from carlots to 150 tons. A leading southern producer reports sales aggregating 1200 tons of foundry, mainly to stove interests. A Kansas City melter took 300 tons, and 400 tons went to an east side job foundry. This interest is now operating five of its six blast furnaces, and continues to quote $18.50 Birmingham for No. 2. The leading local producer, which is still on basic, reports shipments well in excess of current make. Some difficulty in getting through shipments because of the shopmen's strike is reported, but thus far no serious inconvenience has resulted. Both coke and coal are increasingly hard to obtain. Prices on coal are advancing sharply.

Coke Advances Sharply

Prices of Connellsville Beehive Fuel Increased $3 in Week, Furnace Grade Being $12.50—Only Small Tonnages Obtainable

COKE PRICES, PAGE 144

Pittsburgh, July 18.—Only small tonnages of beehive coke are involved in market transactions. The feature of the market here is the rapid advance over prices prevailing one week ago. This advance amounts approximately to $3 per ton, quotations going up at the rate of about 50 cents daily. Sales of foundry coke have been made in the last few hours at $13, ovens, and now $13.50 is being quoted. Quotations have been forced up by bids from those in urgent need of coke. Blast furnaces are unable to obtain quotations on large lots and the market on furnace coke is nominally $12 to $12.50, or $1 per ton below the market on standard selected 72-hour fuel. One or two fairly sizable inquiries are out for furnace coke for lime-burning purposes. As high as $12 and $12.50 have been paid this week for lots of four or five carloads at a time. Because it is difficult to get the coke oven workers now employed to select the coal properly, a few producers are selling their coke simply as "coke." While in many cases it is being used as foundry fuel, the producers do not guarantee it as such, although it commands the full market price. The latest serious factor in the coke situation is the curtailed supplies of by-product coal due to congestion in the Kentucky and West Virginia fields from whence has come most of this fuel to by-product oven operators for many weeks. The railroads tapping those fields are seriously affected by the shopmen's strike and the Youngstown Sheet & Tube Co., as well as other by-product coke producers, has had to cut down by-product oven operation. This has caused the banking of several blast furnaces, including that of the Trumbull-Cliffs Furnace Co. and may bring about the banking of others this week including that of the Shenango Furnace Co. Production, according to the *Connellsville Courier* for the week ending July 15 was 53,902 tons as compared with 70,210 tons in the preceding week.

Conserve for New England

Boston, July 17.—New England by-product coke producers are holding firmly to their quotations established July 1 for foundry coke, namely $13.50, contract, and $14.50, spot, where the local freight rate does not exceed $3.10. For the miscellaneous trade crushed coke is quoted by the New England Coal & Coke Co. at $12, spot, and $11, contract, for New England delivery. Producers are trying to conserve as much as possible for home industries, and higher prices would be asked outside New England. Foundries are fairly well covered on contract, but the general industrial demand is heavy. Inquiries for 1000 tons bring quotations on only half that amount for prompt shipment. Heavy tonnages of crushed coke have been booked for the remainder of the month, and egg, nut and furnace sizes are booked about four weeks ahead. An increasing demand for domestic coke is noted.

Prices Continue Upward

New York, July 18.—Coke prices are mounting rapidly due to the increasingly serious condition resulting from the coal strike. While demand is not heavy in this district as compared with normal, it is larger than the supply. Operators have been able during the past week to obtain prices ranging from $11 to $12.50 Connellsville, for standard foundry coke for prompt shipment. This range is tending to narrow to $12 to $12.50. The Seaboard By-Products Coke Co. has advanced its price on by-product foundry coke to $11, ovens, equivalent to $11.84 to $13.02, delivered at Newark and other northern New Jersey points.

Offerings Are Few

Cleveland, O., July 18.—Offerings of Wise County, Virginia coke which recently have been made in this district, at $7 ovens have been shut off because of the strike. However, some New River, West Virginia coke still is available at $9 ovens, with one shipping route open. Spot Connellsville foundry coke is offered at $10.75 ovens in open type cars and $11 in box cars Consumers are showing more concern over supplies but no instances of enforced curtailment of operations have appeared.

Coke and Cars Scarce

Cincinnati, July 18.—Where it is possible to get a single car or a small number of cars moved, the limited tonnage of coke available is being delivered on contracts to consumers. Blast furnaces and foundries throughout this district face the possibility of suspension. There is a feverish demand from all quarters. Fuel is getting scarcer every day and the inability of the railroads to carry the scant supply is increasing. A strong probability of a sharp slump in by-product output is presented by the announcement made today that arrangements are being made to bank the ovens at Ashland, Ky., until the coal supply situation has improved.

Can't Get Southern Coke

Philadelphia, July 18.—For Connellsville furnace coke, $10 ovens actually has been paid here, and it is reported that $11 has been done. The coke situation in the East is becoming serious for some furnaces. One furnace which purchased Alabama coke, as reported last week, has been unable to get shipment owing to the strike on southern railroads and the necessity of the railroads moving the peach and watermelon crops. One steelmaker is reported to have banked three furnaces. Others will be banked soon unless they obtain supplies. Foundry coke sold in the week at $10.75 to $11.50, and the latter now is generally being asked.

Turn Away Bar Tonnages

Due to Lack of Capacity and Full Order Books Producers Are Forced To Decline Business — Automobile Demand Is Maintained

BAR PRICES, PAGE 144

Chicago, July 18.—Soft steel bar production is handicapped by the labor and fuel situation. All makers report having turned down large tonnages during the week, due to lack of capacity and full order books. Spot delivery has in several cases commanded an advance of from $2 to $5 per ton. Sales for fourth quarter during the week have been made at 1.75c, Chicago mill. The farm implement trade continues to lead in demand, although new inquiry shows a greater diversity than was apparent at the first of the month.

Bar iron manufacturers report a disinclination to continue selling at practically no profit, or as claimed in some cases, at a loss, and prices therefore are expected to advance within the next few days. One manufacturer is on the point of lifting his price from 1.80c to 2.00c, base, a $4 per ton advance.

In hard bars the situation is somewhat different. Production is limited by fuel scarcity and for this reason some orders have been turned down. However, manufacturers are anxious for business at the prevailing price, which ranges from 1.65c to 1.70c, mill.

Prompt Shipment Bars Scarce

New York, July 18.—Supplies of steel bars for prompt shipment are small and mills which recently were able to book prompt business now are sold up for two to three months. As a result, consumers are unable to get prompt bars below 1.80c, base Pittsburgh. On shipment at the mills' convenience, the usual price now is 1.70c. In fact, the 1.60c price which recently was the market minimum seems to have disappeared. Demand for forging bars continues active and the minimum price on this grade appears to be 2.05c base Pittsburgh.

A leading seller of iron bars recently advanced prices about 10 points, quoting 1.70c, Pittsburgh, on the larger lots and 1.80c on the smaller. These figures are rapidly being accepted throughout the market. While no large inquiries are reported, demand generally is improving.

Automobile Production Large

Cleveland, July 18.—Demand for forging bars in this district continues at a high rate indicating a maintenance of automobile building activity on a surprising scale. In fact information from leading builders in Detroit is that their August schedules will be practically as large as those in recent months. This is contrary to expectations as a considerable slowing down was looked for during July and August. However, some of the automobile plants are in lower production. Buyers are pressing hard for bar deliveries and the situation especially in some sizes is worse than at any time. The strike situation undoubtedly has contributed to this although the mills were badly congested previously. Not so much interest in placing or accepting new tonnage is being shown by either buyers or sellers owing to the filled-up condition of mill books. Some of the larger independent producers have withdrawn from the market under present uncertainties. The market remains quoted at 1.70c to 1.80c, Pittsburgh.

Sellers Cut Buyers' Efforts

Pittsburgh, July 18.—Orders for merchant steel bars would grow measurably if makers would take all the business offered. Spot shipments are not obtainable below 1.70c and even 1.80c is being quoted and obtained for prompt deliveries. Some of the larger users are under contract for their third quarter requirements, but report difficulty in getting deliveries. Several round tonnages have been booked from a few consuming lines and numerous small orders have been placed by others, some contingent upon the mills being able to obtain fuel.

Shipping Fast as Possible

Pittsburgh, July 18.—As fast as the cold-drawn steel bar producers in Pittsburgh and Beaver Falls, Pa., districts can obtain deliveries of merchant steel bars, shipments on bookings are made, but still they are far behind. These makers are receiving only one-third of the steel they have specified and operations are hampered accordingly. New business is of pleasing proportions and in addition many of the numerous orders placed involve attractive drawings; for instance one order booked this week was for 1000 tons of three sizes, for prompt delivery. While 2.25c, base Pittsburgh, represents the level at which a slight measure of profit may be enjoyed, 2.10c continues the quotable market since a few producers are selling at that figure. With 1.70c and 1.80c, base Pittsburgh, steel bars, however, makers say, little or no profit is being made on that basis.

Bolt, Nut and Rivet Prices Firm; Demand Fair

NUT AND BOLT PRICES, PAGE 200

Cleveland, July 18.—Orders for bolts and nuts continue to be received by makers in this territory in pleasing number. Probably the most outstanding development of the market is the fact that agricultural implement makers are now making purchases which today are considered sizable when compared with orders placed during the past two years. Prices are firm and while the quoted discounts are generally being maintained prompt delivery brings out higher prices, which consumers appear willing to pay. So far the rail strike has made no change in the market other than bring in numerous orders.

Rivet prices are being maintained at the old figures, namely 2.40c and 2.50c Pittsburgh, for structural and boiler rivets respectively. The leading maker here has accepted a considerable amount of business at these prices for this quarter. Practically no shading is reported.

Further Strength Manifested

Pittsburgh, July 18.—Further strength is manifested in the nut, bolt and rivet market in that the higher prices inaugurated a few weeks ago are being held rigidly. The bar and rod markets are higher hence there is a trend toward further increased levels for these finished products. Most of the business is in carload lots from jobbers, and occasionally larger tonnages are placed. Operations still are maintained at a high rate with the hope that contract obligations can be reduced. A somewhat slackened interest was noted last week but the past two or three days has witnessed a revival in demand.

Demand Drops Off

Chicago, July 18.—Demand for bolts and nuts temporarily has fallen off due to the fact most consumers were covered before the third quarter started. Prices, however, are firm and inquiry seems to point to a renewal in buying soon after Aug. 1.

Buying Falls Off

Philadelphia, July 18.—Bolt, nut and rivet buying is not as active as has been the case for the past few weeks. Specifications for third quarter contracts are small due to the fact heavy specifications were made on second quarter contracts prior to June 30. It is understood the Pennsylvania railroad will close within the next few days on its third quarter bolt and nut requirements.

Hoop Orders Are Heavy

HOOP PRICES, PAGE 144

Pittsburgh, July 18.—Orders for hoops and bands are comparatively heavy and on them shipments can continue for the next 60 days in most cases, at present high rates without further bookings. While most of these orders have been booked at lower prices, the minimum of the market today is 2.50c, base Pittsburgh, with 2.75c being obtained on certain sizes and gages. Hot-rolled strip steel manufacturers maintain the same levels on the narrow sizes and thin gages of flats. Most of the business of the latter character is coming from automobile parts makers.

Eastern Plant Operating Near To Capacity

N. & G. Taylor Co., Philadelphia, manufacturers of tin and terne plate, reports a high degree of activity at its Cumberland, Md., plant, involving capacity operations of all the principal departments. All of the open hearths are in operation with the bar mill both running day and night turns. Additional capacity has been added to the tin house to keep pace with the heavy increase in the demand for the company's roofing plate, demand for which has been greatly stimulated by the present building activity. Plans are

now being prepared for the construction of a larger power plant to include the most improved type of boilers, automatic stokers, coal handling machinery, etc.

Federal Leather Belting Specifications Adopted

New federal specifications for leather belting now are being published. These are the combined product of the manufacturers, represented by the Leather Belting Exchange, and the consumers of belting, represented by the United States bureau of standards, being the product of committees from each of these organizations. The design on the part of the government has been to secure specifications for leather belting which would provide for its own use a satisfactory and substantial quality, on which competition could be fairly based, while the desire on the part of the leather belting manufacturers has been to define the elements of such superior quality in such a form as to make them available to the industries, with an assurance to purchasers that they were receiving belting of a quality suitable for their work.

In the past there have been many specifications for leather belting, but practically all were made by buyers only, without any or little reference to the views of makers, with the result some of them were impossible. These objections have been avoided in the new specifications. Heretofore, some of the leather belt makers have had their own specifications to which they rigidly adhered with the result of a fairly uniform product. Other have had specifications to which they did not adhere so closely, the details of the specifications being variable. It now is expected that these will be changed in general practice so that products will conform closely to the new specifications.

Orders Excessive Freight on Iron Refunded

Birmingham, Ala., July 17.—Judge W. L. Grubb in the United States court here, has awarded $175,242 in a refund of excessive freight charges alleged to have been collected on shipments of pig iron for two years prior to April, 1912, by the Louisville & Nashville, the Southern, the Mobile & Ohio, the Alabama Great Southern and the Illinois Central railroads. The furnace interests awarded the refund are the Sloss-Sheffield Steel & Iron Co., the Woodward Iron Co. and the Alabama Co. Judge Grubb sustained the ruling of the interstate commerce commission of June, 1914, that during the period from April, 1910, to September, 1915, the freight rates on pig iron, out of Birmingham, were unlawful and excessive to the extent of 35 cents per long ton. On the total amount involved the Sloss-Sheffield company was seeking to recover approximately $122,147, the Woodward company approximately $43,140, and the Alabama Co. $9950.

The Alan Wood Iron & Steel Co. is about to blow in its No. 1 furnace and will continue No. 3 in blast for a short time.

Plate Shipments Delayed

Shortage of Fuel Still Principle Factor — Fair Sized Tonnages Continue To Be Placed — Market Strong

PLATE PRICES, PAGE 144

New York, July 18.—The New York, New Haven & Hartford railroad is in the market for 1000 to 2000 tons of plates, shapes and bars for repairing cars. A good demand continues to feature the plate market and this is reflected in rising mill operations. The eastern makers as well as those in the Middle West, however, are beginning to feel the effect of the coal situation. Some mills are getting only a portion of the coal they require to support operations and if shipments continue to be received in reduced volume the mills will have to cut down production. In some cases, a shutdown is threatened. The 1.60c base price which recently was the minimum on plates practically has disappeared and 1.70c apparently is the present minimum. An increasing percentage of the current business is going at 1.80c base Pittsburgh. Higher prices have been done on prompt carloads. The Tebo Yacht Basin Co., subsidiary of the Todd Shipyards Corp., has received a contract for the construction of three tugs for the New York Central railroad.

The Bethlehem Shipbuilding Co. has booked three car floats from the Bush Terminal Co., and also a tanker for the Standard Oil Co. of California.

Deliveries More Restricted

Pittsburgh, July 18.—Deliveries of plates, both prompt and extended, are more restricted, due to the fact that the coal strike has cut down fuel supplies and the railroad strike has interfered somewhat with the movement of steel. So far the latter has not been serious. In the case of the Cambria Steel Co., for instance, deliveries of both universal and sheared plates from Coatesvills, Pa., plant to western destinations are from six to eight weeks deferred, while from Johnstown, Pa., they may be obtained within four weeks. The former are quoted at 2.00c, base Coatesville, while the latter are 1.80c, Pittsburgh. From 1.70c to 1.80c base Pittsburgh, is considered the quotable market. The Riter-Conley Co. will fabricate approximately 700 tons of plate work for C. O. Kyle, general contractor, Los Angeles.

Market is Strong

Cleveland, July 18.—Some fair sized tonnages of plate requirements continue to come out and the market is strong. Some of the larger mills are out of the market on new sales because of the strikes, and deliveries with these interests have fallen further in arrears. A southern Ohio fabricator is reported to have taken 1500 tons for a gas holder for Ohio destination. A total of 30 oil stills requiring 1200 to 1500 tons is about to be placed. The Midland Steamship Co., Midland, Ont. has taken a 2300-ton freight vessel of the self-unloading conveyor type for James Playfair, of Midland, and others, requiring about 1000 tons. From 3000 to 4000 tons are required for locomotives being bid upon in this district which include 75 for the Illinois Central, an increase of 25 over that reported a week ago, this representing switcher type, and 15 for the Baltimore & Ohio. Prices range from 1.70c to 2.00c, Pittsburgh.

Public work for the city of Detroit now pending calls for 250 tons of plates if the general design of reinforcing concrete is adopted. Should structural steel be used about 2000 tons of plates will be required. About 850 tons of special plates will be required for the large safety deposit vault for the new Union Trust Co., Cleveland, awarded to the Diebold Safe & Lock Co.

Mills Behind on Delivery

Chicago, July 18.—Despite the retarding effect of the railroad strike on repair work, orders for plates from railroads continue to show a surprisingly large volume. Most of the inquiry is for relatively small tonnages, items which are urgent and which are known to form a small percentage of the tonnage which railroads would place if it were not for the strike situation. The Chicago, Burlington & Quincy railroad came into the market during the week for 3000 tons of plates for car repairs, and it is understood that a good part of this tonnage will have to be shipped from Pennsylvania or other eastern producing districts because of the slow delivery from local mills. The Inland Steel Co. has practically withdrawn from the third quarter plate market, because of full order books. Prices are firm at 1.85c, Chicago mill, with smaller prompt delivery transactions commanding $2 in some cases.

Round Tonnage Is Placed

Buffalo, July 18.—The Buffalo Steel Car Co., which was seeking 8000 tons has contracted for a portion of this amount at the price of 1.70c, Pittsburgh.

Market Continues Active

Philadelphia, July 18.—Plate buying continues active. One maker reports it could operate every mill double turn if coal supplies permitted. During the past two weeks the Pennsylvania railroad placed 7000 tons of plates and now is expected to place several more, all for shipment to car plants for conversion into pressed and punched car parts. The Baldwin Locomotive Works will place a large tonnage for locomotives. The Newport News Shipbuilding & Drydock Co. booked two boats for the Ocean Steamship Co. and awarded 4500 tons of plates to the Steel corporation mills. The Newport News Shipbuilding company is figuring on two 1000-foot passenger boats. The war department opens bids Aug. 1 on four dredges each requiring 1300 tons. The current market ranges from 1.70c to 1.80c, base Pittsburgh. Attractive lots are tending toward a minimum of 1.80c, Pittsburgh. Several carloads for prompt shipment to Pittsburgh, went at 2.05c, eastern mill, equivalent to 2.375c, delivered.

Strikes Affecting Scrap

Cause Purchases To Be Curtailed, Car Supply To Be Limited and Prices To Advance—Heavy Future Buying Looked For

SCRAP PRICES, PAGE 204

Chicago, July 18.—The scrap market which has been comparatively dull has been brought to life by a new demand, directly traceable to the coal strike, for borings and turnings for blast furnace use. As a result borings have advanced to $13 per gross ton delivered and turnings to $10. It is claimed by the use of more scrap some furnace interests, are able to cut down their fuel supply per ton of pig iron by about 400 pounds of coke. One interest, formerly using 2000 pounds of coke per ton of iron is now operating at 1600 rounds of coke by the use of fairly large quantities of borings and turnings. Demand for other grades of scrap is more or less listless with prices unaltered. The railroad strike, is having a pronounced effect on the buying of scrap from the railroads because of scarcity of open cars and the refusal of dealers to take scrap in box cars. Several roads have issued lists of scrap offered, but the right to load in box cars is reserved in at least two cases. The Atchison, Topeka & Santa Fe is offering 1,700 tons of spring steel, brake shoes, cast frames, etc. The Northern Pacific is offering 2500 tons, mostly rail and heavy melting steel. The Wabash has 300 tons of miscellaneous.

Iron Shortage Reflected

Boston, July 18.—Activity in borings and turnings still constitutes the feature of the scrap market locally, sales approximating 1500 tons during the past week. From $15 to $15.50 has been quoted on this material, delivered Pittsburgh. Apparently the shortage of pig iron a few weeks ago started the movement, which has gathered momentum lately. In other respects the market is quiet and without change.

Market Looking Up a Little

Birmingham, Ala., July 17.—The scrap market is improving a little with the exception of heavy melting steel. Quotations are showing firmness. The prices given are minimum, according to some dealers. The use of heavy melting steel by the Republic Iron & Steel Co. at its Thomas blast furnaces in iron making, has attracted some attention. The Gulf States Steel Co. is not buying in any great quantity, having four of its open-hearth furnaces in operation.

Cast Grades Advanced

New York, July 18.—An advance of 50 cents has been made in cast scrap, the heavy grade holding at $14.50 to $15 and machinery at $15.50 to $16, f. o. b. New York. Shortage of material due to recent substantial buying by the foundries and difficulties in transportation, especially in New England, as a result of the rail strike, are the principal reasons for this advance. Other grades are unchanged, with buying light and of a routine character.

More Activity Apparent

St. Louis, July 17.—The scrap market in the past several days has taken a decided turn upward, both in activity and price. The chief industries suddenly began buying and with stocks low, railroad offerings light and supplies generally scant, values responded in sharp advances. Due to the strike, railroads are unable to load and ship their accumulations. Reclaiming plants have been closed down temporarily, and will not be put in operation again before the shop crafts return to work. Orders for finished goods continue to flow in upon the mills and foundries, and these interests are making strenuous efforts to cover their raw material requirements. Purchases of steel by plants in the district during the past 10 days or two weeks will total close to 25,000 tons.

Firmness Marks Market

Pittsburgh, July 18.—Firmness continues to be noted in the scrap market despite the lack of buying by local consumers. The combined effect of the coal and railroad strike has curtailed purchases considerably, although the Cambria Steel Co. continues to be a larger purchaser in the East. By rea-

(Concluded on Page 160)

Billet Demand Active

Round Tonnages of Rerolling Grade Booked—Some Mills Short—Wire Rods Quoted at $42, and Over

SEMIFINISHED STEEL PRICES, PAGE 144

Pittsburgh, July 18.—Additional inquiries are appearing for rerolling billets, and mills like the Cambria Steel Co., are unable to quote on them, being fully obligated. Some inquiries for round tonnages of small billets now are current and on these $37, mill, usually is the price named. The 4 x 4-inch size are $35, mill, as are slabs and sheet bars. Users report considerable difficulty in booking their requirements in these forms of semifinished steel, hence new buying is extremely limited. A few inquiries are out for wire rods and $42, Pittsburgh, and higher is being quoted by independent producers as against last week's minimum of $40, Pittsburgh, which is understood to remain the American Steel & Wire Co.'s price. Skelp is quoted from 1.70c to 2.00c, base Pittsburgh, on producer having increased from 1.80c and 1.90c to 2.00c during the past week on both sheared and universal skelp. Not many inquiries are being circulated, the general mill situation being fully known.

Stronger Tendency Noted

New York, July 18.—Owing to the fact that mills have no surplus of semifinished steel above the requirements of their own finishing departments, prices of the former continue to show a tendency to advance. The $42, base Pittsburgh, price which recently was done on forging billets now is the minimum on this product with a number of makers, and it is considered unlikely in some quarters that less could be done. For wire rods $42, base Pittsburgh, has been paid during the past week in this district and the market now is regarded as $40 to $42, with a tendency toward $42 as the minimum. Rerolling billets last were sold at $35, base Pittsburgh, but this figure is largely nominal in view of the fact that there has been no business in this grade during the past week.

Little Material Available

Youngstown, O., July 18.—Little tonnage of semifinished steel is available at mills here for delivery over the remainder of this quarter. The railroad and fuel situation is threatening production to such an extent that mills hesitate to increase their present obligations. Sheet bars, billets and slabs are quotable at $35, Youngstown. Of the total tonnage of bookings, sheet bars head the list. Sheetmakers are well covered for their supply of sheet bars over this quarter although the situation is somewhat clouded for the time being in view of the fuel and railroad controversies.

Sells 5000 Tons of Billets

Cleveland, July 18.—The leading maker of semifinished material in this district in the week booked 5000 tons of rerolling billets at $35. Inquiry is current from a consumer in the Cleveland district for 1500 tons of forging billets, around 2 x 2 inches. Inquiries are also being received for carloads of 4 x 4-inch forging billets, on which $43 is being quoted. No additional transactions in sheet bars are reported.

Low Prices Disappearing

Philadelphia, July 18.—Rerolling billets were sold here in the week at $37 and also $35, base, Pittsburgh, but the latter figure is disappearing. A price of $42 is now regarded as the minimum on forging billets, but the market is not being tested.

Strip Premiums Are Paid

STRIP PRICES, PAGE 144

Pittsburgh, July 18.—Premiums are being paid for prompt deliveries of hot and cold-rolled strip steel, buyers being anxious to get strip stocks into their plants in the event of serious railroad labor difficulties. New demand as well as specifications on contracts are coming in from all sources, steadily and insistently, the chief urge being for deliveries. The premiums being paid as outlined above are around $5 per ton, depending upon the extent of the distress prompting such offers.

The minimum of the hot and cold-rolled strip steel markets are 2.50c and 4.00c; other quotations run as high as 2.75c and 4.25c, base Pittsburgh, respectively. Individual orders are fairly large and makers are much encouraged over prospects but hope that the labor difficulties quickly will be ironed out.

Tin Plate Buying

Shows Sudden Expansion—Makers Expect Large Orders

TIN PLATE PRICES, PAGE 144

Pittsburgh, July 18.—Tin plate took a sudden spurt forward in new buying activity during the past week. This is attributed to the reports from the canning industry that the pea pack is 10 to 12 per cent greater than ever before. Canmakers also are preparing to care for the corn crop, which because of the warm weather is expected to be large and more corn any other vegetable is packed in tin. Not only did new buying pick up to the extent of a few hundred thousand base boxes but specifications on contracts also increased slightly. Shipments are continuing at a high rate and operations likewise, possibly 85 per cent representing the average. Many mills are feeling the pinch of a labor shortage and due to this and other causes the American company has only about 75 per cent of its tin mills engaged. The price remains unchanged at $4.75 per base box, 100 pounds, Pittsburgh.

Warehouse Prices Are Firm; Demand Heavy

WAREHOUSE PRICES, PAGE 200

Cleveland, July 18.—The leading producer's local warehouse reports demand for iron and steel products out of stock is greater than at any other time in two years. Bars continue in great demand and orders for structural shapes and galvanized sheets are also of fair size. Considerable regular mill business is coming to the warehouses as a result of the inability of buyers to obtain prompt shipments from mills. Prices are firm.

Market Is Active

New York, July 18.—Reflecting the growing congestion at mills, demand in the local warehouse market is the most active it has been at any time in recent months. Shapes, bars and sheets continue in outstanding demand. While price revisions have been expected for some time past, none as yet has materialized.

Best Week in Two Years

Philadelphia, July 18.—Jobbers in iron and steel products in this district report business of the past week the best experienced in two years. Demand is from 80 to 85 per cent of what is considered normal. Much of this tonnage is understood to have been placed with warehouses when mill buyers were unable to obtain satisfactory mill shipments. Prices continue unchanged and firm.

Sheets Becoming Scarce

Mill Difficulties Increase and Deliveries for Third Quarter Are Uncertain—Cars in Bad Condition—Demand Continues Strong

SHEET PRICES, PAGE 144

Pittsburgh, July 18.—The demand for sheets shows no signs of abatement. In view of the fact that practically all sheet mills are sold far ahead and are having difficulty in getting steel supplies, due to fuel and railroad strikes, it is probable that the demand will become still greater in the near future. At present the buying is by all classes of sheet fabricators, although full finished automobile sheet buying perhaps leads. Galvanized sheets for many purposes continue in heavy demand and the call for blue annealed also is strong. The American Sheet & Tin Plate Co. has not announced its prices for the fourth quarter, although it may do so within a week or 10 days. Some independents continue to meet the leading interest's third quarter prices of 2.40c, 3.15c 4.15c and 4.50c, base Pittsburgh, on blue annealed, black, galvanized and full finished automobile sheets, respectively. Others are maintaining quotations at levels $3, $4 or $5 per ton in advance of those prices. The American company has 83 per cent of sheet mills scheduled for operation this week but may not be able to maintain that figure for the entire week, due mostly to steel and labor shortage.

Eastern Prices Firmer

Philadelphia, July 18.—New sheet demand here is improving and a higher price tendency is again noted. Current sales are being made on the basis of 2.40c to 2.60c for blue annealed; 3.15c for black and 4.15c to 4.30c for galvanized. Black sheets have not been sold ahead to the same extent as galvanized and blue annealed.

Deliveries Uncertain

Youngstown, O., July 18.—Consumers of sheets are becoming alarmed for fear the shopmen's strike may interfere with deliveries and they are keeping in close contact with the mills. For this reason the demand this week shows considerable strength. In some parts of the Mahoning valley sheet producers are meeting with difficulty in getting sufficient box cars. Box cars with leaky roofs have been made water-tight through the use of tar paper by sheet producers anxious to avoid congestion. Material in transit through the mills has accumulated in pickling departments because of the shortage of skilled foreign labor. The situation regarding late third quarter shipments appears uncertain. Stocks in the country are exceedingly low and the inability of mills to make delivery may mean suspension at innumerable fabricating plants. New demand for all grades of sheets from eastern buyers is slack, but strong from consumers in the Detroit and western districts. Demand for fine finished sheets is strong and it is questionable whether any tonnage of this grade can be had much before November. The price of high grade stocks is firm at 4.75c, base, Pittsburgh. Common grade sheets for third quarter delivery are becoming scarce in the valley. Some makers are holding to the Steel corporation's prices of 2.40c for blue annealed, 3.15c for black and 4.15c for galvanized, base, Pittsburgh, although little tonnage is available. Prices representative of the market range from 3.20c to 3.40c for black and 4.20c to 4.40c for galvanized, base, Pittsburgh.

Some Manganese Ore Sold

New York, July 18.—A cargo of Brazilian manganese ore has been sold during the past week for nearby shipment at 29 cents per unit c.i.f. tidewater. Owing to the extent to which stocks in Brazil have been wiped out, the market is stronger than at any time for the last two years, and this figure is regarded as the minimum. A cargo of Caucasian ore has been sold at 28 cents tidewater for August or September shipment from the Caucasus. It is believed 29 cents now would be the minimum price on this ore. The market on Indian ore is nominal. An offer of 30 cents, tidewater, just has been made but this has not brought out any business.

Wire Demand

Is Limited but Makers Have Good Order Books

WIRE PRICES, PAGE 144

Pittsburgh, July 18.—New business in wire and wire products is limited, although most producers here have good order books for at least 60 days ahead. Many of the orders are for mixed cars of nails and wire from the jobbers or for nails, wire, staples, etc. Several companies in this and the Youngstown, O., districts started to quote 2.40c on nails in order to have an equal break with the American Steel & Wire Co., which has maintained that figure as its price on the nails for some time, but the Cambria Steel Co. still keeps 2.50c as a minimum, and is quoting that figure this week. It, too, has a fair backlog of business. Wire is unchanged at 2.25c with other products priced accordingly.

Summer Lull Starts

Chicago, July 18.—The wire and nail market in this district is in the midst of its usual summer lull. Farmers are too busy with crops at this season to think of building fence or making other repairs and this is reflected through lack of buying by local hardware dealers. Production is below capacity, due, however, not so much to the dull demand as to the fuel and labor situation, which is reported by one large interest to be growing more severe. Prices are unchanged at 2.25c, Pittsburgh, for wire, and 2.40c, Pittsburgh, for nails.

June Shape Bookings Gain

Reports Indicate 88 Per Cent of Capacity Filled—New York Construction First Half Takes 179,000 Tons—Week's Business Heavy

STRUCTURAL SHAPE PRICES, PAGE 144

Washington, July 18.—Structural awards in June, booked by fabricators representing 75 per cent of the country's capacity, amounted to 119,000 tons, according to the bureau of census. This tonnage is equivalent to 66 per cent of capacity of all fabricating shops of the country. On a basis of the rated capacity of 180,000 tons for the entire country, the estimated awards for all fabricators in June would be 158,700 tons, or 88 per cent. The structural awards by months for the past year follow:

Month	Percent	Tonnage
June, 1922	88	158,700
May	82	146,900
April	92	165,900
March	77	139,300
February	43½	78,700
January	40	72,100
December, 1921	40	71,500
November	55¼	99,800
October	54	97,800
September	48	86,000
August	33	59,302
July	33½	60,200
June	37	66,900

Award 3000-Ton Job

Cleveland, July 18.—Decision of interests to award all the steel for the Morland court apartment group to be built in this city has resulted in the placing of 3000 tons with the King Bridge Co. which already has received the contract for the initial block of 310 tons. This is the largest award placed here in several weeks. Numerous smaller projects have been allocated for this district and fabricators continue active in figuring work pending and coming up. Some small angles for this territory have been booked by eastern mills at 1.95c to 2.00c mill. On straight run work, 1.70c continues the minimum.

Small Jobs Plentiful

Buffalo, July 18.—Fabricators are watching for the Brooklyn power house inquiry which is expected to reach 8000 tons when it is placed before the market. Small fabricating jobs are plentiful. They run 10 to 25 tons.

Are Obtaining Premiums

Philadelphia, July 18.—Business in structural shapes is being maintained. Mills are operating as high as fuel and labor conditions will permit. Eastern production averages 75 per cent. Eastern mills are obtaining 1.70c to 1.80c Pittsburgh. Premiums are being paid for prompt mill shipment. Several lots have been sold for prompt western shipment at 1.90c to 2.10c, equivalent to 2.25c to 2.45c delivered Pittsburgh. This is due to the inability of Pittsburgh mills to care for special requirements promptly.

Business Exceeds Normal

New York, July 18.—Figures compiled by leading fabricators show awards of structural tonnages in the metropolitan district in the first six months of the year, involving buildings only total 179,000 tons. Compared with the normal business of around 120,000 tons, this is an increase of 49 per cent. Structural shape activity is being well maintained with prices strong, although relatively unchanged. Fabricated material is holding approximately at $73 to $78 on lofts; $75 to $80 on offices, and $80 to $90 on apartments. Shapes are averaging around 1.75c, Pittsburgh, as low as 1.70c being quoted on some of the larger tonnages and 1.80c on the smaller. Deliveries are an important factor in the settlement of prices. A Pottsville, Pa., fabricator has just resumed operations after having been closed down for more than a year and a half. This interest has confined bookings to small tonnages. Two outstanding awards call for 2400 tons for a high school in Brooklyn and 2000 tons for a power station addition.

5000-Ton Hotel Planned

Boston, July 18.—Activity in structural lines has been instrumental in sustaining quotations on structural steel, which holds firmly at 1.80c, base Pittsburgh. While deliveries from some mills are reported to be slow, local jobbers have had no trouble with shipments. It is particularly noticeable that the smaller fabricating works are doing better.

No large contracts have been closed during the week. The Lewiston, Me., armory job, involving 300 tons, has not been closed. Bids will go in this week for a large state pier at Portland, calling for about 1000 tons. With the settlement of the Statler hotel litigation, announcement is expected almost any day of the bids for steel for this project, probably calling for 5000 tons.

Outstanding Tonnages Lacking

Pittsburgh, July 18.—Awards have not been numerous during the past week, nor have they been marked by any outstanding tonnages. Deliveries from the mills are a matter of daily concern, since lately there has been some hindrance due to coal and railroad labor difficulties. These shipments often are as much as six or eight weeks deferred. Specifications on contracts are fairly numerous and involve sizable tonnages. The structural shape market is quoted at 1.70c to 1.80c, base Pittsburgh, although there still are extant some lower priced contracts. Mills largely are booked for 60 days ahead, mostly on tonnages involving less than 1000 tons each.

Large Jobs Cleared Up

Chicago, July 18.—While the structural market continues strong and demand for small tonnages of shapes is fully as strong as a week ago, most of the large tonnage jobs have been cleaned up or else postponed until fall, and something approaching a summer lull is apparent. Demand for material from mills on work already let is exceedingly urgent and the entire situation is more seriously affected by coal, labor and railway difficulties than is generally admitted. Several important interests are already sold into the fourth quarter. Prices are firm at 1.75c to 1.85c, Chicago mill, with delivery and erected prices showing slight increases in recent awards. One typical award of steel for a mill building was at 3.35c for the fabricated material delivered. Erection prices for this same type of building in the Chicago district ranged from 3.75c to 4.00c complete. The largest work in sight is the Western Electric Co.'s plant addition here calling for 1000 tons for which bids are now being taken.

CONTRACTS PLACED

Awards reported this week..... 24,712 tons
Awards reported last week..... 21,555 tons
Awards reported two weeks ago.... 21,121 tons

360 tons, column cores, Traylor building, Philadelphia, to McClintic-Marshall Co.
258 tons, building for Pennsylvania Salt Mfg. Co., Philadelphia, to McClintic-Marshall Co.
300 tons, navy hangars, San Diego, Cal., to Belmont Iron Works.
2100 tons, including 700 tons each for schools No. 19, No. 69 and No. 135, New York, to Bethlehem Fabricators, Inc.
2100 tons, ten 80,000-barrel tanks for Union Oil Co., to Chicago Bridge & Iron Works.
2400 tons for Utrecht high school, Brooklyn, to McClintic-Marshall Co.
2000 tons for Essex station of public service commission of New Jersey, Newark, to New York Shipbuilding Co.
2000 tons for addition to Lincoln Motor plant, placed by Ford Motor Co. with McClintic-Marshall Co.
1500 tons for United States Chamber of Commerce, Washington, to American Bridge Co.
1000 tons, penstock job at Los Angeles, to Kellogg & Co.
932 tons addition to railway shops for Erie railroad at Hornell, N. Y., to American Bridge Co.
720 tons, Tribune building, Oakland, Cal., to Dyer Bros. Iron Works.
700 tons repairs to Williamsburg bridge, New York, to American Bridge Co.
700 tons for public school No. 188, New York, to Bethlehem Fabricators, Inc.
650 tons, for dams No. 36 and No. 38 on the Ohio river, to Independent Bridge Co.
600 tons, hotel and club house for Business Men's club, Cincinnati, to American Bridge Co.
500 tons for Morris Park shops of Long Island railroad, to Shoemaker-Satterthwaite Bridge Co.
425 tons for work in South America, through Foundation Co. to an independent shop.
325 tons, apartment house, Baker and Green streets, San Francisco, to Central Iron Works.
298 tons, plant addition Aluminum Goods Mfg. Co., Manitowoc, Wis., to Wisconsin Bridge & Iron Co.
129 tons, state bridge at Warroad, Minn., to American Bridge Co., general contract to Guarantee Construction Co.
101 tons, warehouse for Appleton Coated Paper Co., Appleton, Wis., to American Bridge Co., general contract to Northern Boiler & Structural Iron Works.
100 tons, pipe line for United States engineers, San Francisco, to Union Construction Co.
100 tons, building for Bank of Italy, San Francisco, to Palm Iron & Bridge Co.
3000 tons, Morland court group, Cleveland, to King Bridge Co.; includes 310 tons reported sometime ago as placed with this fabricator.
470 tons, Euclid-Seventy-ninth building for Cleveland Trust Co., to Van Dorn Iron Works Co.
304 tons, building for First National bank, Ironton, O., to Fort Pitt Bridge Works.
950 tons, bridge on Inland Empire highway over Snake river at Central Ferry, Wash., to Penn Bridge Co.

CONTRACTS PENDING

3000 to 4000 tons, Chelsea hotel addition, Atlantic City, specifications to be issued shortly by H. C. Balcom, New York, engineer in charge.
1300 tons Book Estate building, Detroit, bids in.
1100 tons for bridge, Lycoming county, Pa.; Bethlehem Steel Bridge Corp. low bidder.
1000 tons, Forty-third street bridge, Pittsburgh, bids to be asked shortly.
1000 tons, three new buildings for Western Electric Co., Chicago, bids being taken.
700 tons, group of buildings for United States navy at Pearl harbor, Hawaii, bids close July 26.
700 tons, machine shop, etc., for United States navy, Hampton Roads, Va., bids close July 26.
600 tons, Union Pacific freight depot, Denver,

bids being taken.
500 tons for city work, Queensboro plaza, New York, bids asked.
500 tons for Academy of Sacred Heart, Philadelphia, pending.
500 tons, addition to Peabody high school, Pittsburgh, bids to be asked.
500 tons, Hilltown bridge over Salinas river, Cal., general contract to Standard Industrial Engineering Corp.
450 tons for Interborough Rapid Transit Co. substation, New York, bids asked.
400 tons, West Technical high school, Cleveland, general contract to Drummond Miller Co.
235 tons, steel viaduct over Six Bit Gulch on Hetch Hetchy railroad, bids to be opened by board of public works, San Francisco, July 26.
200 tons for telephone exchange, West Thirty sixth street, New York, pending; previously reported as 1500 tons.
200 to 300 tons for municipal hospital, Thirty-fourth and Pine streets, Philadelphia, pending.
150 tons, high school, Vandergrift, Pa., bids close July 24.
975 tons, Shaff building, Philadelphia, general contract to Cramp & Co.
2000 tons, Greenfield building, Philadelphia, expected to go to American Bridge Co.
150 tons, building for New York Edison Co., bids being taken.
1400 tons, including 700 tons each for schools No. 161 and No. 189, New York, bids being taken.
500 tons, warehouse for Down & James, Brooklyn, bids being taken.
400 tons, substation, New York, bids being taken.
1600 tons, for Homestead, Pa., viaduct American Bridge Co. low bidder.
200 tons, office, theater and apartment building, St. Clair avenue and East 105th street, Cleveland, bids asked.
400 to 500 tons, building for Erie county, Buffalo, bids being taken.

Will Install Big Safe

The Diebold Safe & Lock Co., Canton, O., has been awarded the contract for installing the safety deposit vault in the new Union Trust Co. at Cleveland. This it is reported, will be the second largest vault in the world the largest being located at Chicago. The vault will cover 6650 square feet and 850 tons of steel will be used in its construction. There will be 20,000 safety deposit boxes installed.

Commodity Index Higher

Washington, July 18.—On the basis of 1913 as 100, the bureau of labor statistics announces the wholesale commodity index for June was 150 compared with 148 for May. The index for metals and metal products for June was 120 and for May 119.

Extend Rate Suspension

Washington, July 18.—The interstate commerce commission today continued until Aug. 29 the suspension of the tariffs under which the railroads proposed to reduce trunk line and exlake iron ore rates 28 and 20 per cent, respectively, in April. In view of the general 10 per cent reduction in rates made effective in June it is believed the greater reductions which the railroads proposed will be abandoned in the end.

Oven Contracts Pending

Pittsburgh, July 18.—While officially the contract has not been definitely closed, it is generally understood that the Carnegie Steel Co., has about concluded arrangements with The Koppers Co., for the long contemplated by-product coke oven expansion at its Clairton, Pa., plant. Details are to be issued later, but the entire job involves the expenditure of approximately $15,000,000.

Railroad Buying Is Active

Cars Placed in Week Exceed 4000—Orders and Inquiries for Locomotives Active—Miscellaneous Purchases Heavy—Repair Bookings Gain

RAILROAD TRACK MATERIAL PRICES, PAGE 144

New York, July 18.—Notwithstanding the strike, some fair car buying is noted. The Norfolk & Western has placed 1000 gondolas, the Nashville, Chattanooga & St. Louis has closed on more than 1000 miscellaneous cars, the Vermont Central for 700 and some orders of lesser importance are reported. At the same time, new inquiry includes 1000 gondolas for the Illinois Central, bringing the total for that road up to 2000, and considerable repair work. A leading locomotive inquiry calls for 75 for the Illinois Central, while an outstanding order calls for 35 for the Baltimore & Ohio, the business going to the Baldwin Locomotive Works. This latter road is also having 25 locomotives repaired at the Baldwin shops. Additional repair work calls for the overhauling of 50 locomotives of the New York Central at the same shops and of 120 for the Erie by the American Locomotive Co.

The Erie railroad is inquiring for 5000 kegs of spikes. The current market on spikes is 2.25c to 2.35c, base Pittsburgh.

Rail Buying Subsides

Chicago, July 18.—In comparison with the round tonnage rail orders of a week ago, buying during the past week has seemed relatively quiet. Demand for track fastenings is more urgent than a week ago and nearly all railroads are in the market for small tonnages of plates, bolts and spikes and other material for repair work. The Chicago, Burlington & Quincy is asking for 3000 tons of plates for repair work and it is doubtful whether this amount can be placed with the local mills for the delivery asked. Because of the strike situation, railroads are buying only such material as they urgently require, and the fact that even under this condition buying is fairly heavy suggests a very active market in case the labor situation should promptly clear. Track bolts are unchanged at 3.60c to 3.70c Chicago. Spikes are 2.60c to 2.70c. The Illinois Central, has not closed on its inquiry for 1000 gondolas. The Texas & Pacific announced that it will start work on 532 freight cars soon.

Orders Exceed Expectations

Pittsburgh, July 18.—While the aggregate of the light rail tonnage being booked is by no means sizable, in several cases it is more than was expected during this combined coal and railroad labor difficulty. In point of number, orders exceed expectations, although most of these are for single carloads. The price is unchanged at 1.75c, base Pittsburgh. Dilworth, Porter & Co. Inc., last week increased their minimum on tie plates from $37.50 to $40 per ton, the present spread being 2.00c to 2.25c, base Pittsburgh.

The Dilworth company increased its price also on small spikes from 2.50c to 2.60c, base Pittsburgh, due to higher prices being paid for billets, fuel, etc. When standard spikes went from 2.25c to 2.35c, several weeks ago, small spikes were not raised. Track bolts still are quotable at 3.00c to 3.50c, Pittsburgh.

1000 Cars Are Placed

Cleveland, July 18.—An order for 1000 box cars has been placed with the Ralston Steel Car Co. Columbus, by the Norfolk & Western railroad. The Illinois Central has added 25 of the switching type to its inquiry for locomotives, making 75 in all. An inquiry for 15 locomotives for the Baltimore & Ohio also is being bid upon.

Big Four Makes Awards

Cincinnati, July 18.—Awards for its third quarter requirements of various steel products has been made by the Big Four railroad against bids recently taken. The Carnegie Steel Co. has received 1400 tons of tank plates, and 500 tons of structural shapes and a small lot of steel bars; the Otis Steel Co. 220 tons of fire box and boiler steel; and the Wheeling Steel Products Co. 160 tons of forging billets.

Equipment Market Active

Philadelphia, July 18.—The Philadelphia & Reading is expected to act immediately on its recent inquiry for 1000 steel and 200 wooden box cars. The Baldwin Locomotive Works has booked 50 locomotives for the Baltimore & Ohio, 35 of which are released immediately and 15 to be released later. The Illinois Central is inquiring for 75 and the Lackawanna 28. The Baldwin works has booked a total of about 200 locomotive repairs. The Pennsylvania has placed 11,000 tons of punched and pressed car repair parts.

CAR ORDERS PLACED

Central Vermont, 500 box cars and 200 gondolas to American Car & Foundry Co.
Nashville, Chattanooga & St. Louis, 750 box, 150 stock and 150 flat cars, to American Car & Foundry Co.
Manila railways, 50 cane, to Koppell Industrial Car & Equipment Co.
Northern Refrigerator Car Co., 500 refrigerator, to Pullman Co.
Delaware, Lackawanna & Western, 370 car bodies to the American Car & Foundry Co.
Norfolk & Western, 1000 box cars, to the Ralston Steel Car Co.
Baltimore & Ohio, 500 gondolas, to General American Car Co.
Buffalo Creek & Gauley, 300 steel hoppers, 55 tons capacity, to American Car & Foundry Co.

CAR ORDERS PENDING

Chicago, Rock Island & Pacific, repairs on approximately 3500 miscellaneous freight, bids asked.
Nashville, Chattanooga & St. Louis, 17 passenger cars, bids asked.
Chicago, Milwaukee & St. Paul, repairs on 1200 box and 250 gondola cars, bids asked.
Illinois Central, 2000 gondola, bids in, and repairs on 600 gondolas, bids asked.
Southern Pacific, 250 general service, bids being asked.
Pittsburgh & West Virginia & West Side Belt, 1000 hopper, bids asked.
San Antonio, Uvalde & Gulf, 25 30-ton steel underframe cars, and 25 30-ton steel gondola cars, bids asked.
Nashville, Chattanooga & St. Louis, 1000 box cars, bids asked.

Concrete Bar Lots Small

Nearly All Markets Reflect Activity—Mills Generally Sold Up and Getting 1.80c to 2.00c Mill for Prompt Available Shipments

REINFORCING BAR PRICES, PAGE 144

New York, July 18.—Current business in concrete reinforcing bars, from a country-wide standpoint, now is about 60 per cent as compared with the movement in May and June. The two latter months furnished the largest amount of business in the history of the trade. Generally now it is considered that the main activity is over and that not much improvement will be reflected in bar buying until September. The supply of bars is well sold up and a good many sellers are having difficulty in furnishing prompt shipment. The usual price on prompt bars is 2.25c, base Pittsburgh. On mill shipment, delivery in four to six weeks, the prices range from 1.70c to 1.80c, while for early August shipment 1.85c is usual. In numerous instances where a portion of a tonnage is wanted promptly and the remainder later the sellers are making average prices depending on the portion of the order that is shipped immediately, and on the length of time for shipping the remainder. On this basis, some of the current business is going at 2.00c to 2.10c, base Pittsburgh. The biggest pending tonnage in which the trade here is interested is 3500 tons for a sewage disposal plant at Buffalo.

Places Round Tonnage

Pittsburgh, July 18.—Lettings in the reinforced concrete bar market have not been numerous nor large the past week, although one interest placed an order for a round tonnage of plain squares with a Pennsylvania steel producer to be specified against later. This is understood to have carried the maximum figure of the quotable market 1.70c to 1.80c, base Pittsburgh. The Carnegie Steel Co. and some independents still have obligations to fill at 1.60c, but this level is not a factor.

Small Lots Predominate

Chicago, July 17.—While the aggregate sales of reinforcing bars in this district continue favorably, large jobs are for the most part dissappearing, and the bulk of the sales is made up of lots from 10 to 70 tons. The legislature at Springfield is working on road appropriation and as the plans call for 10 tons of reinforcing bars per mile of road, the outcome is being watched with considerable interest. The James Stewart Co. closed on the general contract for the Jefferson barracks hospital at St. Louis, which will take 450 tons of bars. The contract for the bars was placed with the Corrugated Bar Co.

Mill prices are firm and it is difficult to get delivery within 60 days. The Steel corporation is quoting 1.80c, Chicago. As high as 2.00c has been paid for nearby delivery. The Chicago warehouse price is 2.38c, but in some cases this has been shaded in recent transactions.

Sizable Work Pending

Cleveland, July 18.—Awards of concrete bar tonnages in this district continue numerous with lots running around 100 to 200 tons. Contractors still are figuring on considerable highway work, bridges especially demanding attention. One lot of 270 tons was placed this week while two others, one of 1200 tons and another of 540 tons, are active. Award of the larger is expected to be made this week. Prices are firm at 1.70c, Pittsburgh or mill minimum, with nothing under this reported, even for exceptional tonnages. Prompt rollings at mill conveniences are booked at 1.80c.

CONTRACTS PLACED

Awards reported this week..... 5,144 tons
Awards reported last week..... 4,370 tons
Awards reported two weeks ago..... 3,000 tons

800 tons, hotel and club house for Business Men's club, Cincinnati, to Bourne-Fuller Co.

800 tons for building for International Paper Co., Glens Falls, N. Y., to Fougner Concrete Steel Co.

450 tons, Jefferson barracks hospital, St. Louis, to Corrugated Bar Co., general contract to James Stewart Co.

400 tons for building for Wilson Body Co., Detroit, to Concrete Steel Co.

350 tons for George Washington Masonic memorial, Alexandria, Va., to Concrete Steel Co.

250 tons for Macy department store addition, New York, to Hartmann, Duncan & Rogow, Inc.

250 tons, for Patton Paint Co., Newark, N. J., to independent fabricator, general contract to James Stewart Co.

220 tons for cigar factory at Philadelphia, to Concrete Steel Co., general contractor, John N. Gill.

190 tons, two Ohio state highway jobs, to Patterson-Leitch Co.

159 tons, state highway work in northeastern Ohio, to Concrete Steel Co.

150 tons, miscellaneous work, to Patterson-Leitch Co.

150 tons for Girard College building, Philadelphia, to Hartmann, Duncan & Rogow, Inc.

150 tons for Ford Motor Co. building, Green Island, N. Y., to Truscon Steel Co.

125 tons, temple for B. P. O. E., Cincinnati lodge No. 3, Ninth and Elm streets, Cincinnati, to Bourne-Fuller Co.

100 tons, Waldinger warehouse, Erie, Pa., to Patterson-Leitch Co.

100 tons, half for school at Leechburg, Pa., and half for club house at Ladgraff, W. Va., to Concrete Steel Co.

100 tons, for Technical high school, McKeesport, Pa., to Metzger & Richardson Co., Pittsburgh; steel to be furnished by Cambria Steel Co.

100 tons for Bell Telephone Co. building, Atlantic City, N. J., to Hartmann, Duncan & Rogaw, Inc.

100 tons for Carl Tucker residence, Mt. Kisco, N. Y., to Fougner Concrete Steel Co.

100 tons for Home for Crippled Children, Newington, Conn., to Fougner Concrete Steel Co.

100 tons for Barnes garage and service building, Albany, N. Y., to Fougner Concrete Steel Co.

CONTRACTS PENDING

3500 tons for sewage disposal plant, Buffalo; Thompson-Starrett Co., low bidder on general contract.

350 tons, gymnasium building for Fenwick club, Pioneer street, Cincinnati, general contract to M. J. Roche Construction Co.

400 tons, Pine Grove apartment hotel, Chicago, bids in.

286 tons, office building, Market and Sansome streets, San Francisco, bids in.

270 tons, West Seventy-third street bridge, Cleveland, general contract to Central States Engineering & Construction Co.

200 tons, Lawndale theater, Chicago, bids being taken.

200 tons for J. B. Serry department store, Port Huron, Mich., bids being taken.

130 tons for building for Louis Meyer Packing Co., Brooklyn; bids in.

100 tons, West Technical high school, Cleveland, general contract to Drummond Miller Co.

100 tons, high school at Vandergrift, Pa.; bids close July 24.

100 tons, Neeley Printing building, Chicago, bids being taken.

Tonnage not stated, $150,000 apartment building for Frederick W. Fehr, Hyde Park, Cincinnati, general contract to be awarded soon.

Tonnage not stated, addition to bank building for Northside State Banking Co., Hamilton avenue and Palm street, Cincinnati, general contract to Weber-Bell Construction Co.

Pipe Jobbers

Increase Purchases—30-Mile Line Is Up—Cast Plants Active

PIPE PRICES, PAGE 144 AND 200

Pittsburgh, July 18.—Jobbers are increasing their weekly purchases of tubular goods to three to 10 carloads per week. One jobber this past week placed 27 carloads of standard full weight merchant pipe with three producers, dividing them evenly. The great desire in connection with pipe as in the case of practically every form of finished steel is prompt deliveries. These usually are from six to eight weeks deferred, except perhaps in the case of plain end pipe, which can be shipped out in most cases within three or four days. This condition is due to the sold-up condition of the pipe finishing mills. An occasional inquiry for 10 or 12 miles of 4-inch line pipe is noted, but large tonnages are practically nil.

Seeks Line Pipe Tonnage

New York, July 18.—The largest line pipe inquiry which has appeared in this district for some time is one from the Texas Co. for 30 miles of 6-inch, or approximately 1500 tons. Demand for merchant pipe in the building sizes continues heavy. Makers practically have exhausted their stocks and are two months or more behind in their shipments. Prices, however, are unchanged.

Manufacturers of cast iron pipe are booked well into fall, in some cases considering no business for delivery before November. Apparently this situation is fast becoming prevalent in other districts, for eastern makers report they are now in receipt of inquiries from virtually every part of the country. The city water department which recently closed on more than 5900 tons, is expected to be in the market shortly for another sizable tonnage. Prices are strong, but nominally unchanged.

Small Lots the Rule

Chicago, July 18.—Following the advance in universal pipe to $39, Birmingham, a week ago, bell and spigot prices have appreciably strengthened and some recent contracts have been at $38, Birmingham. Other interests hold to $37. Awards have dropped off in the aggregate but new work being figured is favorable. A larger proportion of the work is for private operations and public service companies than heretofore. The only municipal jobs which have developed during the week are those at Mitchell, S. Dak., calling for 300 tons of 4 to 10-inch pipe and at Belle Plain, Iowa, calling for 200 tons of 6, 8 and 10-inch.

Pipe Plants All Busy

Birmingham, Ala., July 17.—The feature of the cast iron pipe trade is

the busy condition of the plants. The United States Cast Iron Pipe & Foundry Co. expects much of its new machines in making high pressure pipe and the starting up of its North Birmingham plant soon is looked upon as of much importance in the trade.

Ferro Consumers

Withdraw From Market—Only Small Lots Move—Other Alloys Quiet

FERROALLOY PRICES, PAGE 144

New York, July 18.—While nearly all large consumers have withdrawn from the ferromanganese market and most of the current business is confined to small lots, one or two fair sized transactions have been put through and the sales of the past week therefore aggregate in excess of 1000 tons. Practically all of this involved English ferromanganese, some of it is for July shipment from the other side at $70 tidewater and most of the remainder is for August shipment at $67.50 tidewater. Two English makers now are quoting $70 tidewater for August shipment from abroad.

Conditions in the markets for special ferroalloys have continued mixed. Business in ferrovanadium has been well maintained, partly because of demand for locomotive parts. Buying of alloys for automobile parts has been lighter. Quotations through the list show little change. Ferrovanadium of open-hearth grade is unchanged at $3.50 to $3.75 a pound contained. The low silicon material is quoted $3.50 to $4, some producers having taken business in this grade down to $3.50. Spot carlots of 50 per cent ferrosilicon are selling steadily at $55, delivered. Ferrochrome business is dull. A few sales of foreign low carbon ferrochrome have been made at 22 to 25 cents a pound contained. The tungsten market is dull.

Some Sales Made

Philadelphia, July 18.—Prompt ferromanganese is scarce. Some sales have been made at $72.50 to $75 tidewater, including one lot of 200 tons for July shipment from England, some at $70 for August and some later at $67.50.

Inquiries and Sales Scarce

Pittsburgh, July 18.—The ferroalloys market is almost devoid of either inquiry or orders. This extreme quietness is attributable to the fact that most consumers are under contract for their present and coming requirements for at least two months. Sellers expect that this inactivity, particularly as regards ferromanganese will continue until the latter part of August when it is expected that action will be taken on the tariff bill. One inquiry for a carload of ferromanganese is noted and occasional carload or less than carload inquiries for ferrosilicon, ferrochrome, etc., are circulated. The $67.50, seaboard price on English ferromanganese has practically disappeared. Occasionally a quotation is heard but $70, seaboard is more representative of the market. No domestic quotations are noted as domestic makers are out of the market. Other alloys are unchanged on the bases of recently quoted figures.

The Nonferrous Metals

Copper and Zinc Go Up in Heavy Sales—June Shipments of Copper at Record—Other Metals Quiet

	Copper Electro delivered	Copper Lake delivered	Spot Straits New York	†Lead New York basis	Zinc St. Louis basis	Spot† aluminum	Spot antimony	Nickel spot
July 12.....	14.00	14.00	31.25	5.72½	5.60	18.00	4.95	32.00
July 13.....	14.00	14.00	31.12½	5.72½	5.70	18.00	5.00	32.00
July 14.....	14.00	14.00	31.12½	5.72½	5.75	18.00	5.00	32.00
July 17.....	14.00	14.12½	31.25	5.72½	5.75	18.00	5.00	32.00
July 18.....	14.00	14.12½	31.50	5.72½	5.75	18.00	5.00	32.00

†Outside market quotation.

NEW YORK, July 18.—Buying of copper and zinc have been brisk the past week, despite the coal and railroad strikes and the European uncertainty. Business in the other principal metals has been slow, as regards sales, although consumption in practically all cases proceeds at a high rate. Shortage of labor at mines and smelters is checking production, particularly of copper. Statistically, all the metals have reached a strong position and the markets are quick to respond to each buying movement.

Withdrawals of copper for export and domestic consumption reached a new record in June, about 175,000,000 pounds, whereas new domestic supplies of copper continue at 100,000,000 pounds monthly or less and imports are around 30,000,000. Stocks of refined copper have been reduced to less than the normal supply. Quotations for electrolytic last week reached 14c, delivered, and remain firm at that level, with good sales. Dealers and other outside holders have been asking a shade above this price. Casting copper prices were advanced to 13.37½c to 13.50c, refinery. Lake copper also advanced, to 14.12½c, delivered. The bulk of the domestic copper buying is for wire drawing, now estimated to involve 50,000,000 pounds or more, monthly.

Zinc buying has been brisk, both by consumers and by operators. Prices advanced ¼ cent in the week ended July 15. On July 17 the market was firm at 5.75c, East St. Louis. The American Zinc institute statistics as of June 30 showed smelters' stocks of slab zinc had been reduced to about three weeks' supplies at the June rate of shipment. High grade zinc prices have steadily risen, the latest advance being ¼ cent July 17, to 6.75c, delivered.

The lead market has been quiet, with prices a shade lower on resales by second hands. Producers have been able to do business steadily at 5.50c, East St. Louis, for July shipment. The leading interest has sold steadily at 5.75c, New York. Shipments to consumers on average price contracts continue heavy, consumption in all lines being well maintained.

Tin prices have been easy most of the past week, and then recovered in the past two days. The American Smelting & Refining Co. has been producing electrolytic tin at the rate of about 500 tons a month, or 50 per cent of capacity, but expects to be forced to suspend production shortly, due to inability to buy ore in competition with European smelters.

The aluminum market has been quiet on new business, but shipments on contracts are good. Sales of virgin 98 to 99 per cent virgin ingot have been made at 18c, duty paid New York. Some importers are asking up to 19c, the same as the American producer. Importers are quoting foreign sheets at about 1c less than the domestic product.

The antimony market has been firm at 5c, duty paid New York. Concessions from this price have been quick to attract buyers, but speculative interest has been extremely light.

Mill Products

(Base prices, f.o.b. mill)

SHEETS	
Copper, hot rolled 24 oz., min....	21.00
High brass	17.25
Zinc, ga. 9 to 18 (plates ½c less)	7.5c
Lead, full sheets (cut ¼c more).	9.00
SEAMLESS TUBES	
High brass	21.00
Copper	23.75
RODS	
High brass, round, ⅜ to 2½ inch	14.75
Naval brass rod.....	17.25
WIRE	
Copper	15.25 to 15.75
High brass	17.75

Old Metals

(Dealers' Buying Prices)

HEAVY RED BRASS	
Cleveland	9.00
New York	8.50
Chicago	8.50
HEAVY YELLOW BRASS	
New York	6.00
Chicago	6.50
Cleveland	5.50 to 6.00
ZINC	
New York	3.00
Cleveland	3.00 to 3.25
Chicago	2.75
HEAVY COPPER AND WIRE	
Cleveland	10.50 to 11.00
New York	11.00 to 11.25
RED BRASS TURNINGS	
New York	7.25 to 7.75
Cleveland	7.25 to 7.75
Chicago	7.75
YELLOW BRASS TUBING	
Cleveland	5.50 to 6.00
NO. 1 BRASS ROD TURNINGS	
Cleveland	5.50 to 6.00
New York	5.50 to 6.00
Chicago	6.00
ALUMINUM BORINGS	
Cleveland	6.50 to 7.00

Asks States Protect Coal Mines

President Promises Government Assistance If Needed To Assure Fuel Production—Takes Operators at Own Word Only Protection Is Required—Belief Prevails Strikes Will Be Settled This Week

WASHINGTON, July 18.—President Harding tonight is sending a message to the governors of all coal producing states asking adequate protection for the mines which he has asked the operators to reopen and promising federal assistance if necessary. The government, aroused by the miners' rejection of arbitration and the conditional acceptance by the operators has abandoned efforts to settle the strike and is concentrating on getting coal mined.

In his message to the governors, sent to executives of 28 states, the President reviewed the coal negotiations and the arbitration proposal and said:

"Failure to secure acceptance of this proposal for voluntary adjustment left me no other course but to invite mine operators to resume activities. I trust you will find it consistent to second this invitation if you have not already done so with invitation to all miners and operators to resume at once. This invitation should be accompanied by such assurance of maintained order and protection of lawful endeavor as will give assurance to every one concerned. I want to convey to you in this message assurance of prompt and full support of federal government whenever and wherever you find your own agencies of law and order inadequate to meet the situation. Your state government and the federal government are jointly responsible for maintained conditions under which freemen willing to work may work in safety. To the task of lawful protection and the maintenance of order the federal government pledges you every assistance at its command."

The government's case is as follows: It kept its hand off the strike 13 weeks to make voluntary settlement possible, then proposed negotiations and later arbitration, both of which were rejected. Operators all along have contended they could have reopened the mines if the government had not interfered and assert they could operate with protection. The miners having refused arbitration, the government feels it now is up to the operators to make good their statement. The operators are to be given a reasonable time to produce coal and if they fail, it is presumed the government will step in.

The government is hopeful its action will awaken both sides and bring peace in the industry. The belief still prevails there will be a settlement this week. No steps have been taken to regulate prices of coal from the reopened mines, but Secretary Hoover is to watch this phase. No priority program has been adopted but action likely will be taken to meet the needs of the Northwest.

The administration feels legislation to regulate the coal industry is made certain by the deadlock. Senator Cummins is framing a bill to provide for a coal labor board like the railroad labor board.

As to the rail strike, the administration feels the only bar to the return to work is the settlement of seniority which is expected shortly.

No marked disturbance of the movement of freight is as yet attributed to the shopmen's strike. No complaints have been received concerning inadequate coal supplies except from senators and representatives of the states at the head of the Great Lakes dependent upon lake transportation of their fuel. Employment in June was 3 per cent greater than in May, despite the 600,000 coal miners who were away from their posts. The stock market has not been depressed, and interest rates are receding.

Assuming both the coal and railroad strikes will be settled by the end of this week, an assumption generally entertained in Washington, the resulting increased activity may do little more than offset the usual slump which marks the hot months of July and August. With 60 per cent of their coal movement cut off by the strike the railroads today are handling much more business than they did at this time in 1921 and almost as much as in the boom times of 1920. Railroad loading statistics are irrefutable, and portray accurately the amount of finished products being shipped. In the week ended July 1 the railroads loaded 876,896 carloads of revenue freight. In the same week of 1921 they loaded 100,000 cars less, or 776,079, and in the precipitate year of 1920 only 15,000 more, or 891,621. Add to this year's figure the normal coal tonnage withheld by the coal strike and the railroads in the week ended July 1 would have loaded 950,000 cars of revenue freight. This would have been within 4 per cent of the greatest movement in the history of the railroads of the United States. If the coal strike has depressed business it was not reflected in the freight movement in the thirteenth week of the strike.

Loading of freight other than coal and coke is so near normal the railroads do not look for greatly increased offerings from these sources. Except for a heavy movement to the lakefront for shipment to the head of the Great Lakes, carriers' representatives here do not look for a rush for fuel in event the coal strike is terminated. The prospects are coal prices will go higher than they are or at best remain at the present levels, and this, the railroads believe, will prompt many consumers to buy only for immediate needs.

Up to the time the strike broke, April 1, the railroads moved 2,400,000 cars of coal, or approximately the same movement as in the opening quarter of the banner coal years of 1917, 1918 and 1920. The loading in the first quarter of this year was far ahead of that of the first quarter of the poor years of 1919 and 1921. Considering the heavy movement up to April 1 and the damper upon buying that high prices will make, carriers' representatives here do not anticipate the demand for coal that might be expected as the sequel to the settlement of a great strike.

None of these calculations takes into consideration the 240,000 surplus freight cars which are in serviceable condition, and the 300,000 freight cars awaiting repairs. In September and October local congestion may occur, railroad officials believe, because in those months the carriers do the heaviest business of the year, but the congestion will be precipitated more by terminal conditions than any other factor. The fact of the matter is that when the railroads do a weekly business approximating 900,000 cars of freight they are so near their high-water mark that it is difficult for them to portray better conditions.

In framing their reply to the President flatly turning down his proposal of arbitration, the scale committee of the United Mine Workers last Saturday had in mind the coke regions of western Pennsylvania and other non-union fields. Any arbitration into which they enter must carry with it the assurance that the decision will be binding upon the Frick Coke, Consolidated Coal and other large interests, the mine workers insisted in their reply.

Industry Is Menaced by Strikes

Various Blast Furnaces Forced To Bank and Steel Production Is Being Curtailed—Blockading of Kentucky and West Virginia Coal Shipments Creates Serious Situation—More Sweeping Consequences Anticipated Unless Quick Change Occurs

PITTSBURGH, July 18.—Iron and steel production in the Pittsburgh district as well as in Youngstown territory, has become more seriously affected by the coal and railroad strikes during the past few days. This is due mainly to the fact that for many weeks numerous plants so located have obtained their coal supplies from the Kentucky and West Virginia fields and now while production there could continue, the railroads tapping that territory, namely the Chesapeake & Ohio, the Louisville & Nashville and the Norfolk & Western, have become greatly handicapped through the shopmen's strike. It is claimed that these railroads are moving practically nothing so that a congestion not only of loaded cars on their tracks but of empty cars needing repairs, has been brought about.

Among the first plants to be affected were those of the Youngstown Sheet & Tube Co., the Republic Iron & Steel Co. and the Brier Hill Steel Co. The former company was using by-product coal furnished in exchange for by-product coke, by the Trumbull-Cliffs Furnace Co. and the Shenango Furnace Co. This arrangements now has been practically suspended due to the prevailing conditions. The Youngstown Sheet & Tube Co.'s by-product operation has been curtailed and this in turn has affected blast furnace operation. The Trumbull-Cliffs Furnace Co. had banked its furnace and the Shenango Furnace Co. expects to be compelled to do likewise this week.

In addition to the independent steel companies named as well as several others, the Carnegie Steel Co. likewise is feeling the effects of the virtual stoppage of Kentucky and West Virginia coal. It has blown out one of the group of three Isabella furnaces and may have to discontinue operations at other stacks. This is because many of the remaining 38 active furnaces depend upon the Clairton by-product coke plant for fuel. Much of the coal for the latter operation has been coming from Kentucky and West Virginia.

As to the Connellsville nonunion district, the influence of the railroad strike on the movement of coal or coke tonnage is not so serious since that movement already was negligible due to the coal strike. The Baltimore & Ohio railroad is perhaps the worst affected by the railroad strike since it has been moving most of the restricted production of coal and coke out o fthe region. Now it is shipping practically nothing.

Deliveries of steel to conversion mills is being more and more hampered. Shippers are feeling the effects of the railroad strike indirectly in that many socalled good order cars are being spotted and when en route break down, due to improper care. This happened to a pipe producer on three different occasions within a day or two of each other this past week.

The LaBelle Iron Works has failed to bank a furnace this week. The Republic Iron & Steel Co., which only recently started its bessemer department at Youngstown, has ceased to operate this capacity for the time being. The Carnegie Steel Co. has about 77 per cent of steelmaking capacity engaged compared with 80 per cent before the rail strike. The American Sheet & Tin Plate Co., due to shortened steel supply as well as to a labor shortage, only has active this week about 75 per cent of its tin plate mills and 83 per cent of its sheet mills.

Chicago Operations Are Reduced by Strikes

Chicago, July 18.—While the Illinois Steel Co. reports operations at 84.2 per cent of capacity and other steel interests in this district are inclined to be optimistic as regards the effect of the coal strike, it is unquestionably true that the fuel situation is becoming acute. At Gary where the coal reserve is heavier than at any other point in this district, the incoming tonnage is falling far short of that required by plant operation and according to one report, the stock piles are being diminished by at least 80,000 tons per week. At this rate, however, it is estimated the supply will last about two months.

Lack of fuel is the cause of reducing operations in many steel mills and other manufacturing plants here. The Inland Steel Co., reports it would blow in a third blast furnace at once if the fuel situation would warrant. Effects of both the coal and railroad strikes is apparent throughout the industry, and many who have been in personal contact with conditions point to several instances where absence of wrecking crews is causing serious delays to the movement of freight. In South Chicago a derailed car has tied up a line of switch track for five days. Engineers and brakemen refuse to help in clearing the track as they claim this falls within the province of the shopmen. In other cases superintendents and office men have donned working clothes and helped in much needed repair work. One careful observer states that already movement of freight in this district has slowed down 20 per cent.

Three Valley Furnaces Banked; Mills Running

Youngstown, O., July 18.—Three blast furnaces, two at the Republic Iron & Steel Co., and one at the Trumbull Steel Co., were banked late last week and two batteries of coke ovens placed on gas owing to the failure of certain railroads to make delivery of by-product coking coal in transit for several days. Blast furnace operations, therefore, were reduced from 64 to 54 per cent representing 15 active stacks in the valley. Further blast furnace curtailment is likely. The fuel situation has not affected steelmaking or rolling mill operation as yet although suspension on a broad scale is inevitable within the next month unless it clarifies somewhat in the meantime. In some cases railroads have resorted to the confiscation of coal which in turn has compelled several steelmakers here to draw on stocks.

Independent open-hearth activity at 88 per cent of capacity shows no change over a week ago. In all 45 furnaces are being charged including 11 each at the Republic Iron & Steel Co., the Youngstown Sheet & Tube Co., and the Brier Hill Steel Co.; seven at the Trumbull Steel Co.; and five at the Sharon Steel Hoop Co.

Sheet mill operations were reduced 3 per cent this week owing to mechanical difficulty at one plant. Activity in this direction, however, stands at 95 per cent representing 106 active mills. The Brier Hill Steel Co., has 28 under power, the Republic Iron & Steel Co., 16, the Youngstown Sheet & Tube Co., and the Trumbull Steel Co., 15 each, the Newton Steel Co., 10, the Falcon Steel Co., and the Mahoning Valley Steel Co., eight each and the Sharon Steel Hoop Co., six.

Pipe mill operation in this district stands at 82 per cent. Active units include 10 at the Youngstown Sheet &

Tube Co., and five at the Republic Iron & Steel Co. The former company also has a merchant bar mill and its rod and wire departments active. In addition the Republic company has five finishing mills engaged. One plate mill at the Brier Hill Steel Co., and 29 hot tin mills at the Trumbull Steel Co.'s two plants are active.

New England Is Concerned Over Coal Situation

Boston, July 18.—New England is more concerned over the coal strike situation than the railroad strike, the effects of the latter being much less severe. Of the men who walked out of the rail shops on July 1, more than 50 per cent have either returned or have been replaced and there has been practically no disorder. New employes are being easily obtained by both the New Haven and Boston & Maine railroads. Little difficulty has been encountered in letting out work. The Boston & Maine is sending the bulk of its work to the Laconia Car Works while the New Haven has contracted for the rebuilding of 6000 bad order cars out of some 35,000 owned, with the Keith Car & Mfg. Co. A few locomotives have been sent to the Baldwin Locomotive Works.

Manufacturers generally have not felt the effects of the rail strike here. No embargoes have been proclaimed by the railroads and unless some arise through connections with other lines none is expected. Rail officials report that both passenger and freight business is substantially on a normal basis. However, the coal situation is more serious. While as yet there is no apparent shortage, receipts of new coal shipments have been about 16 per cent of normal since April 1. It is expected that shortage will be felt keenly in the fall and winter. Public utilities have about a three months supply on hand and private industries are reported fairly well stocked for the immediate future.

Strikes Affect Northern Ohio Furnaces

Cleveland, July 18.—Scarcity of fuel due to the strike of miners and railroad shopmen is affecting to some extent the operations of nearly all the iron and steel producers whose headquarters are in Cleveland. The Cherry Valley furnace of M. A. Hanna & Co., at Leetonia, O., will be blown out probably this week, and will be relined. The company's furnace at Dover, O., may be blown out Aug. 1. The Trumbull-Cliffs furnace, at Warren, O., an affiliation of the Cleveland Cliffs Iron Co., has been blown out. The Cleveland Cliffs company intended to start one of its Cleveland furnaces about Aug. 1, but the plan now is indefinite. It continues to operate its other furnace at Cleveland. Owing to the inability of the company to obtain cars, its coal mining operations in West Virginia have been interfered with and this threatens to retard other operations. The situation is developing rapidly, and widespread suspensions throughout northern Ohio are anticipated if a change for the better does not occur within a week. Steel mills here and in the Mahoning valley are hard pressed for coal.

Iron mine operations in the Lake Superior district are slowing down, and at least two large companies which had planned to increase output are unable to do so. One of the leading producers has reduced its rate of output 40 per cent. The Great Northern railroad is cutting down the allowance of ore cars. Lake vessels are running short of fuel and a number of them will be sent to their docks this week. The unloading docks at lower lake ports also lack coal, though the report current to the effect that the Pittsburgh & Lake Erie dock at Fairport, O., over which the Steel corporation obtains ore is incorrect, the Pittsburgh Steamship Co. reporting "all operations as usual."

Embargoes Declared by Roads at St. Louis

St. Louis, July 18.—The chief result of the railroad shopmen's strike in this district has been delay in departure and arrival of trains, both passenger and freight, and minor interference with shipment of freight. Violence has been confined to isolated cases, principally in the great yards on the east side of the Mississippi river.

Temporary embargoes have been declared by virtually all roads operating through this gateway, the southern lines taking the most drastic action in this respect. Some congestion is reported in the yard of the St. Louis Terminal Railway association, which includes the 28 principal railroads. No industrial plants have been closed by the strike, and the only reaction reported by them is difficulty in obtaining equipment, and poor order of the cars placed. All the railroad shops are closed. No efforts on a large scale have been made to resume work with nonunion workmen. Thus far adequate protection has been afforded by the police in St. Louis and cities on the east side. Troops have been sent to Poplar Bluff, Mo., and other militia units are mobilized in readiness to send on short notice to other points where trouble is threatened.

New Record Is Made in By-Product Coke

Washington, July 18.—To replace the deficit in beehive coke caused by the strike in the Connellsville region and other beehive coke districts, the by-product ovens are now producing at a rate above the average for 1920. The geological survey reports the total output of by-product coke in June was in round numbers 2,580,000 net tons, against a monthly average of 2,565,000 tons in 1920, the record year. The average output per working day was 86,000 net tons, an increase of 5 per cent over the May average. The month's production represented 70 per cent of the aggregate capacity of the ovens. Of the 71 plants in existence, 58 were active and 13 idle.

Because of the low production of beehive coke, 458,000 tons in June, against a monthly average of 1,748,000 tons in 1920, the total output of all coke was only 3,038,000 tons. This was 70.5 per cent of the monthly average of all coke in 1920. The following summarizes the monthly output of by-product and beehive coke in the United States, in net tons:

Monthly average	By-product coke	Beehive coke	Total
1917	1,870,000	2,764,000	4,634,000
1918	2,166,000	2,540,000	4,706,000
1919	2,095,000	1,638,000	3,733,000
1920	2,565,000	1,748,000	4,313,000
1921	1,660,000	463,000	2,123,000
1922			
February	1,795,000	549,000	2,344,000
March	2,137,000	732,000	2,869,000
April	2,208,000	528,000	2,736,000
May	2,537,000	432,000	2,969,000
June	2,580,000	458,000	3,038,000

To make the coke produced in June, it is estimated, required 4,429,000 tons of coal, of which 3,707,000 tons was used in by-product ovens and 722,000 tons in beehive ovens. The present monthly rate of consumption of coking coal is about 1,300,000 tons above the 1921 average but is still 2,660,000 tons below the average in the year of maximum demand, 1918.

The geological survey's report says:

"A new cause has arisen to limit the production of coal, namely, local congestion of traffic associated with the strike of the railway shopmen. Because of the uncertainties of the situation it is difficult to forecast production for the week, July 10-15, but the record of the first four days suggests that the output of bituminous coal can hardly exceed 4,300,000 tons. Production of anthracite continues practically at zero. Final returns on the week of Independence day, the fourteenth of the strike, show that 3,936,000 net tons of soft coal and 23,000 tons of anthracite were produced, a total of 3,959,000 tons."

According to a report by the Northwestern Coal Dock Operators' association the stocks on July 1 on the

commercial docks at Duluth, Superior, Ashland and Washburn were as follows:

	Anthracite	Bituminous
July 1, 1922	363,771	1,498,276
July 1, 1921	400,395	4,342,467

The association reported that on July 1 the greater part of the bituminous coal had already been sold.

Cincinnati Coal Stocks Fall and Prices Rise

Cincinnati, July 18.—Industrial Cincinnati is beginning to feel the pinch of high cost coal caused by the prevalent strikes. Fuel stocks in a general way had been bountiful, due to close proximity of nonunion coal fields when the trouble began and these supplies have been kept up well through continued barge towing on the Ohio river.

Among the iron and steel interests from blast furnaces through the list to the foundries there is a growing uneasiness as to the future. Although there is no immediate danger of enforced shutdowns because of a coal famine, no one knows how long it will be possible to continue operations. The American Rolling Mill Co. expects to be able to keeps its two operating furnaces in blast and the Portsmouth furnace of the Whitaker-Glessner Co. is not expected to be affected. The by-product coke ovens at Ashland, Ky., may be banked shortly.

Eastern Plants Unable To Obtain Deliveries

Philadelphia, July 18.—Iron and steel production in this district is seriously imperiled by the coal and railroad strikes. The Central Iron & Steel Co. has a large amount of coal loaded into cars at the mines but is unable to get deliveries owing to the strike situation on the Baltimore & Ohio railroad.

The company had its open hearths equipped with oil burners some years ago and now, despite the higher cost, is operating at capacity on oil. An eastern furnace which purchased coke in Alabama a week ago is unable to obtain shipment owing to the strike on the Southern railroad. Several blast furnaces have been banked or are expected to be banked in the next few days because of the coke shortage.

Shipment of Coal From South Is Delayed

Birmingham, Ala., July 18.—Coal shipments out of the Birmingham district are being delayed. A few trains are not operated on schedule and one or two others have been taken off. Pig iron, steel, cast iron pipe and other products of the Birmingham district are being started on their way satisfactorily but do not reach their destinations as promptly as usual.

Prominent railroad officials have been to the Birmingham district recently, including C. H. Markham, of the Illinois Central; W. A. Winburn, of the Central of Georgia, and general managers of other roads. The Louisville & Nashville railroad has fared best of all in the immediate Birmingham district, little interference with its service being reported. All roads are receiving protection as asked for, from the city, county and state authorities. Pig iron consumers in the Birmingham district are assured steady delivery.

Operations at Iron Mines Are Reduced

Duluth, July 18.—While the Oliver Iron Mining Co. is operating and shipping from all its active mines on the Minnesota ranges, the independent companies are curtailing operations as a result of reports from eastern furnaces, and the shortage of coal supplies. Some of the Steel corporation's interests are understood to have covered their coal requirements for some time ahead, but certain independents are short.

How Britain Fought Her Great Coal Strike

BY H. COLE ESTEP

European Manager, The Iron Trade Review

LAST year Great Britain passed through a strike crisis which had many points of similarity with the great problem now facing American industry. The result, in a country where union organizations are much more powerful than in the United States, was almost total defeat for the forces of disruption. How was this accomplished?

Briefly, the collapse of the great British coal strike on July 1, 1921, just three months after it started, was due to the prompt steps taken to forestall violence, to the organization of the country to resist the pinch of fuel shortage, and to the pressure of the government continuously applied to both sides until a reasonable settlement was reached—a settlement incidentally which has resulted in a 50 per cent reduction in British coal miners' wages in the past year.

Within a few days after the Miners Federation of Great Britain called out its million members, on April 1, the so-called Triple Alliance threatened a sympathetic strike of railway and transport workers of all kinds. Immediately the government mobilized the regular army reserve and inside of 10 days put 500,000 men in the field with full equipment. This gave the government 650,000 troops with which to quell possible disorders. The threatened railway and transport strikes never materialized. Camps were established outside each important industrial area and at strategic points along the railways. Confronted by this force, the mob element among the strikers was completely overawed. There were only incipient outbreaks here and there which were easily dealt with by the police.

The next step was the reimposition of the wartime coal control and priority system, only in this case the order of priority for fuel was as follows: Railways; steamships in foreign trade; households; public service companies; manufacturers of food, ice, etc.; general industry. No householder was allowed to buy more than two hundredweights (224 pounds) of coal per week. Half the passenger and freight trains were cancelled to save fuel. Gas and electric lights were cut off at 10 p. m. daily. Manufacturers, except food, were allowed to purchase fuel sufficient only for 50 per cent operations.

Little or no opportunity was given the striking miners to obtain substitute employment, and they were refused the national unemployment pay of £1 per week. Finally continuous pressure was exerted both on the employers and the miners to reach a reasonable settlement and both parties to the dispute knew that the public was willing, if necessary, both to sacrifice and fight for such a settlement.

Water Rate Cut 30 Cents

Pacific Steamship Companies Reduce Steel Freight Tariff 50 Per Cent—Lower Prices Expected but So Far Are Advanced

SAN FRANCISCO, July 14.—In the local steel market, demand is being well maintained with pipe, shapes and sheets most active. Consumers are interested in the rate war between the various companies engaged in the Atlantic to Pacific service. The old conference rate of 60 cents per 100 pounds now is down to 30 cents with steamship companies willing to contract at this rate for the balance of the year. While material from stock has not reflected this reduction, many are of the opinion that new prices will shortly be announced.

Building permits issued in Los Angeles in June again were heavy, being the largest this year with the exception of April which totaled $12,959,686. June statistics showed 3751 permits with a total valuation of $10,652,265.

Pig Iron and Coke

Pig iron merchants in this section report demand exceptionally light and so far this month no particularly attractive inquiry has developed. A survey recently made by one prominent dealer disclosed the fact that foundry operations on the average are not over 30 per cent. Under such circumstances little real buying is to be expected. Belgian iron, equivalent to No. 2 southern (1.75 to 2.25 silicon), is being quoted at from $25 to $26 c. i. f. with no takers. With the stiffening in price at southern furnaces, foreign material is once again the factor in this district.

Little of interest has transpired in the coke market. Sales have comprised carload lots only and due to the low rate of operation among the foundries, inquiries are few. One smelting interest has placed 1000 tons of English foundry coke, guaranteed moisture of 1 per cent, at approximately $15 c. i. f. San Francisco port.

Bars, Plates and Shapes

Bar mill operators report bookings are more satisfactory. The Pacific Coast Steel Co. now has two open-hearth furnaces in operation for the first time in over a year. As has been the case, so far this year, the greater aggregate tonnage is made up of small lots under 100 tons. Effective July 1 local mills advanced their price on merchant bars from 2.55c to 2.65c f. o. b. San Francisco. The 2.60c f. o. b price on reinforcing material is nominal and it is thought a new figure may be announced within a week.

Prices on cold-rolled material are stiffening and 2.10c, base Pittsburgh, now appears to be the minimum with as high as 2.25c for prompt delivery. Demand is improving slightly and stocks are fairly well assorted.

Plate men encouraged by the number of new inquiries coming to hand as well as by the increase in bookings. Current this week are several inquiries of fair size, one involving 3900 tons of plates, one for 900 tons and another for 725 tons. The Chicago Bridge & Iron Co. was awarded recently, 10 additional 80,000-barrel tanks for the Union Oil Co., 2100 tons of plates involved. The Union Construction Co. secured a contract for 5000 feet of 20-inch shore line pipe for the United States Engineers office, 100 tons involved. Kellogg & Co., Newark, N. J., secured a penstock job for Los Angeles involving 1000 tons.

With building operations continuing at a rapid pace, structural demand is active, with numerous moderate tonnages and an occasional large one being let. Two inquiries are current this week from fabricators for 450 tons and 1900 tons of shapes.

Other Finished Material

Demand for oil country goods and standard black pipe is heavy and deliveries, in many instances, are causing consumers much concern. Oil field operations reported for the week ending July 8 show 19 new wells started as compared with 29 during the previous week.. Total new wells this year is 710, as compared with 801 same date last year. Deepening or re-drilling jobs numbered 13, as compared with 19 the previous week. Total to date this year 465; same date last year 425.

Both private and municipal demand for cast iron pipe is quiet this week only one municipal award being made. The United States Cast Iron Pipe & Foundry Co. secured 110 tons of 4 to 8-inch pipe for Alhambra.

Warehouse Material

Demand for material from stock in June showed between 10 and 12 per cent increase over May, 1922, and approximately 30 per cent over May, 1921. Demand is from diversified sources and so far this month is of satisfactory volume. One large interest is behind a week in billing and in getting orders out. Jobbers do not contemplate any reduction to correspond with freight rate reductions of July 1. As a matter of fact, an advance is noted in most lines. There is some possibility of lower prices in the near future to correspond with the low rates being quoted by the steamship companies. New prices are as follows: Bars from 3.25c to 3.40c, shapes and plates from 3.25c to 3.40c; blue annealed No. 10 gage from 4.30c to 4.50c, bands from 3.90c to 4.05c, cold-rolled shafting from 4.65c to 4.80c; boiler-rivets reduced from 4.85c to to 4.50c. In Los Angeles bands have been advanced from 4.15c to 4.30c.

Cement Output Up Again

Washington, July 18.—Production of cement in the United States in June totaled 11,245,000 barrels, compared with 11,176,000 in May 1922 and 9,296,000 in June, 1921. Shipments amounted to 13,470,000 barrels in June, 12,749,000 in May and 10,577,000 in June, 1921. Stocks at the end of June totaled 10,668,000 barrels, and at the end of May 12,893,000. Production for the first half of 1922 amounted to 31,664,000 barrels, against 27,228,000 in the first half of 1921. Shipments were 34,811,000 barrels in the first half of this year and 27,984,000 in the first half of last year.

Strikes Affecting Scrap

(Concluded from Page 150)

son of this the market has strengthened somewhat in that section.

Occasionally distress scrap appears which quickly is absorbed by dealers. Heavy melting steel cannot be quoted at above $16.50 to $17, although not much is available at the minimum, which is the figure some consumers would pay. Embargoes exist here and there due to certain conditions among users, which will not permit them to take in scrap coming in on contract.

Buffalo Market Strong

Buffalo, July 18.—The scrap market is strong and prices are firm. The demand for spring steel, knuckles, angle bars, short steel rails and special scrap in the Pittsburgh market is a forerunner, dealers say, of the demand here. Heavy melting steel is firm at $17, the $16.50 price having disappeared. Borings are strong and production in the district is short. Turnings are scarce and the Pittsburgh market is as high for them as heavy melting steel. The shopmen's strike is resulting in a shortage of gondolas which is now beginning to affect conditions.

Strikes Affect Market

Cincinnati, July 18.—The effect of the two strikes on the operations of scrap consumers is being felt here. If conditions were normal there would be an active buying demand as stocks on consumers yards are known to be light, which makes for firm prices. A big movement of scrap is expected once the coal strike is out of the way and the railroads again are able to make deliveries.

Demand and Prices Off

Cleveland, July 18.—Dealers here blame the railroad and coal strikes for the quietness prevailing in the scrap market. Prices have softened somewhat and demand has fallen off considerably. Production is low, yards are filled and dealers are doing little except trading among themselves and little of that. Heavy melting steel has dropped to a level of $14.75 to $15 and No. 1 bushelings are quoted at $10.50 to $11.

Only Small Lots Go

Philadelphia, July 18.—Scrap buying is in small lots in this district, due to uncertainty of steelworks operation over the coal and railroad situation. Prices largely are nominal but dealers are firm and quote unchanged prices.

Market in Britain Is Inactive

Quarterly Meetings Unproductive of New Business—Cleveland Pig Iron and Welsh Semifinished Steel Price Agreements Abolished—Railroad Rates Reduced Slightly—German Output Continues To Decline

The Iron Trade Review Staff Cable

European Headquarters,
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LONDON, July 17.—Quarterly meetings in the iron and steel trade have been unproductive of new business and the market is slow at present. Agreements respecting prices of Cleveland pig iron and Welsh semifinished steel have been abolished and an open market now prevails. Two furnace stacks in the Barrow-in-Furness district have been banked, having accumulated 100,000 tons of pig iron.

Railroad rates have been reduced. Those on coal and iron ore have been lowered from 75 per cent above the prewar level to 60 per cent. The flat rate surcharge has been reduced from 3 pence ($0.055) to 2 pence ($0.036. The surcharge on iron and steel has been

Sterling—$4.45

cut from 6 pence ($0.11) to 4 pence ($0.07). Production costs have not been reduced materially through these changes. Freight costs for furnaces in the Midland are 34 shillings ($7.56) per ton of pig iron manufactured.

British iron and steel exports in June amounted to 249,089 tons including 12,791 tons of scrap. Imports amounted to 58,856. The government has decided to build two first class battleships each to cost £8,000,000.

German production continues to decline. The output of ore is down 25 per cent as compared with March. Coke is scarce. Coal miners are deserting for higher wages in the building and other trades. Semifinished steel is unobtainable.

More blast furnaces in France, have been blown in, the number now in operation being 40 per cent of the total.

Production of pig iron in Great Britain in June amounted to 369,200 tons compared with 407,900 in May, 394,000 in April, 389,800 in March, 300,100 in February and 288,000 in January. On June 30, 115 stacks were in blast.

The production of steel in June amounted to 400,200 tons compared with 462,300 tons in May.

The slump in the rate of exchange of the Belgian franc has brought Belgian finished steel to £8 10s ($37.82), delivered at Birmingham.

Britain Notes Widespread Quickening of Trade

European Staff Correspondence

Office of THE IRON TRADE REVIEW,
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BIRMINGHAM, Eng., July 7.—The general revival in the British iron and steel trade has definitely commenced. A few authorities believe the revival is likely to be slow until the New Year, but most manufacturers expect to be busy in October at the latest.

A matter of great importance to the iron trade is the decided revival in the cotton industry, which invariably precedes a certain amount of engineering activity. The cotton trade manufacturers are reported to have full order books. There are signs that foreign railroads consider the time has arrived to order rolling stock. Among this week's orders is one for 36 electric locomotives placed with the English Electric Co. for the Japanese imperial government railways. This order is worth £500,000 and will benefit the Sheffield steel trade to some extent.

Another revival is noted in constructional engineering which has passed through a period of unprecedented dullness. Birmingham is now beginning to get a share of this business, chiefly because the works more favorably located on the coast are getting filled up. The past 10 days has been the best for nearly two years as regards the business of leading constructional engineers in and around Birmingham.

Pig iron buyers are still rather cautious, though a little interest is being taken in forward requirements. This is most noticeable in the Midlands

Sterling $4.46

where the demand for foundry iron is increasing. Some revival in the Staffordshire iron trade has brought a few good orders for forge pig iron, very encouraging to Northampton firms which for months have been unable to sell their second quality material. Of the 70 blast furnaces on the Northeast coast, 29 are at work. That district is not very successful in selling to Scotland just now, as shown by statistics for June, the shipments to Scotland amounting to 2785 tons as compared with 5860 to Wales. Belgian smelters have been doing a little business with the port of Grangemouth on the Clyde, undercutting Cleveland, although the latter has been prepared to sell at the comparatively low price of £4 16s 8d ($21.55), f. o. t. Grangemouth.

In the Northwest area of Barrow-in-Furness the improvement is rather in tone than in increased tonnage. Larger inquiry, however, is the sequel to a recovery of engineering business after the strike. Consumers aware of larger stocks of pig iron are pressing for reductions in price. The demand is chiefly for ordinary iron. There are at present 11 furnaces in blast of the normal 25, and no immediate addition is contemplated. In this area Scotland is a limited buyer, though the Midlands take increasing quantities, and France, Belgium and Germany are good customers for low phosphorus qualities. The local rail mills are consuming increasing quantities of pig iron, and there are signs that this business will increase.

After a prolonged slump, the shipbuilding outlook is a shade brighter. There are hopes that with cheaper steel and the reduction in the wages of workers in shipyards and engineering shops contracts will be placed for some tramp steamers which are known to be required.

Makers of ferromanganese are under no illusions with regard to the brisk American business, being aware that this has some connection with the pending tariff now under consideration in America. The trade, however, is startled by the announcement first made by THE IRON TRADE REVIEW cablegram this week that the proposed tariff is for no less than $33.60. It is agreed here that any such tariff must be prohibitive and the hope is expressed that Americans will consider such an addition to their costs of production as imperilling steel trade interests generally.

There is a tendency in coke prices to harden, and very little hope is entertained of cheaper fuel. The iron and steel trades share with the colliery owners the keen dissatisfaction with the present 7-hour work system in the pits, which they regard as chiefly responsible for the high cost of fuel.

The position of the finished steel trade is not specially encouraging. At present, the principle improvement is in the billet department, a great deal of semifinished material having been sold within the past week. A large Staffordshire firm has considered it safe to increase its quota-

Current Iron and Steel Prices of Europe

British Market

Home Market Prices. Gross Tons at Works or Furnace. or F.o.b.

Corrected to Date by Cable

	$	£ s d
SEMIFINISHED STEEL		
Billets, soft steel	30.04	6 15 0
Sheet bars	30.04	6 15 0
Wire rods	42.28	9 10 0
FINISHED STEEL		
Steel bars, England, ½ to 3-inch	39.49	8 17 6
Steel bars, England, ½ to 3-inch, for export	37.83	8 10 0
Plates, ship, bridge and tank, England	39.49	8 17 6
Plates, ship, bridge and tank, England, for export	37.83	8 10 0
Plates, ship, bridge and tank, Scotland	39.49	8 17 6
Plates, ship, bridge and tank, Scotland, for export	37.83	8 10 0
Beams, England	40.05	9 0 0
Beams, England, for export	36.71	8 5 0
Beams, Scotland	40.05	9 0 0
Beams, Scotland, for export	37.83	8 10 0
Sheets, black, 24 gage	47.28	10 12 6
Sheets, galvanized, 24 gage	69.53	15 12 6
Rails, 60 lbs. and over	35.60	8 0 0
Rails, 60 lbs. and over, for export	33.38	7 10 0
Tin plate, base box, 108 lbs	4.34	0 19 6
Steel hoops	46.73	10 10 0
Steel hoops, for export	44.50	10 0 0
PIG IRON		
Hematite, East Coast, Mixed Numbers	20.03	4 10 0
Hematite, West Coast, Mixed Numbers	20.91	4 14 0
Basic Middlesbrough	17.80	4 0 0
No. 3 Foundry, Middlesbrough	20.03	4 10 0
No. 3 Foundry, Derby, Leicester, Nottingham	18.36	4 2 6
No. 3 Foundry, Northamptonshire	17.24	3 17 6
No. 3 Foundry, Staffordshire	17.80	4 0 0
No. 3 Foundry, Scotch	20.58	4 12 6
Ferromanganese, 76 to 80 per cent	66.75	15 0 0
Ferromanganese, 76 to 80 per cent, for export	63.41	14 5 0
COKE		
Yorkshire furnace	4.33	0 19 0
Yorkshire foundry	6.12	1 7 6

Where no separate export prices are given, same quotations apply to domestic and foreign business.

German Market

Prices Last Reported

	$	Marks per metric ton
PIG IRON		
Hematite, Oberhausen	16.81	6724
Foundry, No. 3, Oberhausen	15.34	6136
Bessemer Stahleisen, Siegen	15.75	6300
COKE		
Ruhr furnace	3.27	1308.10
Ruhr foundry	3.39	1355
SEMIFINISHED STEEL		
Billets	23.54	9415
Sheet bars	32.98	9190
Wire rods	22.41	8965
FINISHED STEEL		
Standard rails	34.00	13,600
Merchant bars	26.03	10,410
Structural shapes	26.15	10,460
Ship plates	29.83	11,930
Medium plates, 3 to 5 millimeters	33.92	13,570
Sheets, below 3 millimeters	36.12	14,450
Tin plate	85.00	34,000
Plain wire	28.68	11,470
Bands and strips	29.95	11,980

All prices are f.o.b. furnace or mill.

French Market

Prices Last Reported

	$	Francs per metric ton (2205 lbs.)
PIG IRON		
Hematite, Lorraine	25.20	315
Basic Bessemer, Lorraine	17.20	215
Foundry, Longwy, No. 3, sand-cast	16.40	205
Foundry, Longwy, No. 3, chill-cast	17.20	215
Ferromanganese, 76 to 80 per cent	75.60	945
COKE		
French furnace	8.00	100
German furnace, f.o.b. frontier	7.44	93
French foundry	10.00	125
SEMIFINISHED STEEL		
Blooms	25.20	315
Billets	27.20	340
Sheet bars	29.20	365
FINISHED STEEL		
Standard rails	44.00	550
Merchant bars	34.80	435
Angles	38.00	475
Normal beams and profiles	38.00	475
Plates, ship and tank, 10 millimeters and thicker	47.20	590
Plates, bridge and tank, 5 to 10 millimeters	51.20	640
Sheets, black, 3 millimeters	57.60	720
Sheets, blue annealed, 2 millimeters	72.00	900
Shafting, cold-drawn, 40 to 60 millimeters	68.00	850
Bars, 2 per cent nickel steel	88.00	1100

All prices are f.o.b. furnace or works.

Belgian Market

Prices Last Reported

	$	Francs per metric ton (2205 lbs.)
PIG IRON		
Basic bessemer, Belgian	15.00	200
Basic open-hearth, Belgian	16.50	220
Gray forge, Belgian	15.00	200
Foundry, No. 3, Belgian	16.88	225
Foundry, No. 3, Luxemburg	16.88	225
Foundry, No. 3, Lorraine	16.88	225
SEMIFINISHED STEEL		
Blooms	23.25	310
Billets	24.00	320
Sheet bars	25.13	335
Wire rods	36.00	480
FINISHED MATERIAL		
Standard rails	30.00	400
Merchant bars	30.75	410
Normal beams and profiles	27.48	385
Plates, 5 millimeters and thicker	34.88	465
Sheets, black, 3 millimeters	39.00	520
Sheets, galvanized, 1 millimeter	99.38	1325
Plain wire	45.75	610
Galvanized wire	58.16	775
Wire nails	33.38	445

All prices are f.o.b. furnace or works.

tions from £7 10s ($33.45) to £7 15s ($34.56). Welsh makers would still be willing to sell their billets at £7 10s ($33.45), delivered.

The most noticeable development relates to finished iron, a marked revival being apparent in South Staffordshire. The improvement in the nut and bolt business is maintained, and the iron for this is bought either from Staffordshire or Lancashire at about £9 17s 6d ($44.04) although No. 3 Belgian bars can be bought delivered at £1 ($4.46) less.

Scotland reports a little revival in galvanized sheets. Otherwise, the trade is quiet and quite insufficient to absorb the output. Business is usually taken at £15 17s 6d ($70.79) f. o. b. Liverpool with still lower prices in South Wales. The reduction of 10 shillings ($2.23) in black sheets lately declared by Scotland has brought out a little new business. The Staffordshire mills appear to be getting a disproportionate share of this trade.

The tin plate trade is improving, with firmer prices at 19 shillings 9 pence ($4.40) per box and a number of the mills are booked well into autumn. Business is being done in all the usual foreign markets, Canada still being in evidence as a good buyer.

Belgian Trade Quiet; Prices Vary Widely

European Staff Correspondence

BRUSSELS, July 7.—New business in the Belgian iron and steel market is scarce. Producers have been laboring under unstable political and economic conditions for many months and the difficulties have been augmented by recent labor troubles. At Ghent over 4000 workmen have decided to remain on strike, and at Fontaine L'Eveque the wire nail mills are still closed due to the failure of employers and employes to come to an understanding as to wage readjustments.

Franc—$0.08

Another depressing influence is the

competition from Luxemburg, especially on semifinished products. French pig iron producers are losing their hold on the Belgian market, as buyers are now turning to Luxemburg furnaces for their requirements because of their proximity as well as price considerations. Domestic demand for all classes of iron and steel products is gradually falling off. Export business is also on the decline. It is reported that Japan and China have practically ceased buying from Belgium and the demand from India has greatly diminished. Spain and the Argentine continue to place large orders with Belgian makers. A large order from Sweden for rails has been booked by the LaProvidence works within the past few days.

The pig iron market is extremely quiet, and semifinished products are moving slowly. Several new mills have been started and production exceeds the demand which is far under normal. Transactions in merchant bars are becoming less numerous and prices which had risen to 425 francs ($34) per metric ton are now being adjusted downward. The Providence works recently offered 3000 tons of flats, rounds and squares at prices ranging from 430 francs ($34.40) to 448 francs ($35.84) per metric ton, according to destination. The same concern quoted 438 francs ($34.80) for shapes and angles as compared to 472.50 francs ($37.80) to 517.50 francs ($41.40) quoted by other Belgian mills. This is illustrative of the broad range in prices which is the outstanding characteristic of the Belgian market at present.

Holland is buying plates. High finish sheets and other special grades are much sought and prices have been adjusted upward as far as English competition will permit. An order for 100 tons of black sheets was recently taken by Hermant at Ghent, at 520 francs ($41.60) per metric ton. Other makers quoted prices ranging from 527.50 francs ($42.20) to 637.50 francs ($51).

New Difficulties Beset German Trade

European Special Correspondence

DUSSELDORF, Germany, July 6.—Scarcity of raw materials, money and skilled men, coupled with another bad slump in the mark, slow production and an exceedingly nervous labor situation are combining to inject considerable uncertainty into the German iron and steel market.

Coal miners have refused to work overtime and are leaving the mines because they can obtain higher wages in the building trades where the average for unskilled men is now over 40 marks per hour. In order to get the coal miners to work several of the large industrial companies including Krupp, the Stinnes group, Thyssen and others, have decided to stop all new construction and house building for the next three months.

Mark—$0.0025

The iron ore miners are following the same tactics as the coal miners and the result is exceedingly unsatisfactory from the standpoint of production. Prices of ordinary Ruhr steam coal have been increased by 326.75 marks ($0.94) per ton. It is expected that coke soon will advance.

Very little export business is current mainly because of price uncertainties and the fact that in general German iron and steel is now up to world levels. In several cases recently German quotations on important foreign contracts have exceeded English, French and Belgian prices by a considerable margin. The inland demand is again active in consequence of the depreciating exchange and the fear of further price increases.

Pig iron remains very scarce and heavy premiums are being paid for German iron. The situation is getting worse for the independent foundries and steelworks because the bulk of the pig iron and semifinished material is being absorbed by the big self-contained concerns.

A number of companies are finding it difficult to raise sufficient funds to pay for their necessary imports of iron ore and other raw materials in foreign countries. Reserves which have been accumulating during the past two years are being drawn upon.

French Market Active; Output Increasing

European Staff Correspondence

Office of THE IRON TRADE REVIEW,
224 Rue de Rivoli,

PARIS, July 6.—The French iron and steel market is maintaining its gains of the past few months and new business is equal to shipments against old orders. The market is active. Prices are firm and do not appear to be influenced by exchange fluctuations.

A certain apprehension is noted among iron and steel producers concerning the Wiesbaden and Berlin agreements under which Germany will make reparations to France by supplying certain materials required for reconstruction work in the devastated regions, as it is feared that French industry will not be sufficiently protected. As a result of these conventions, German goods will benefit by special customs duties and freight rates.

The price of reparations coke remains fixed at 93 francs ($7.90) per metric ton. French furnace coke is now quoted at 100 francs ($8.50) but the output of French ovens amounts to only 10 to 15 per cent of present blast furnace consumption.

Production of pig iron increased from 383,260 tons in April to 442,206 tons in May. A number of furnaces have increased their production. At Rombas six furnaces with an annual capacity of 460,000 tons are now blowing. In Lorraine, 37 out of the total of 66 furnaces are operating as compared to 34 on May 1.

Franc—$0.085

No. 3 chill-cast foundry pig is quoted at 210 francs ($17.85) to 220 francs ($18.70) per metric ton. The reconstitution of the comptoir handling this product, Comptoir de Longwy, which was expected to be effected early in July will probably not be completed before October. Hematite pig iron is easier owing to the rise in sterling exchange. East Coast hematite is offered at 310 francs ($26.35) to 315 francs ($26.75) f. o. b. Northern French ports and French furnaces are meeting these prices. At Rouen the monthly production of hematite is now averaging 7000 tons.

May production of steel amounted to 363,800 tons as against 324,350 tons during April. The domestic demand for semifinished products is declining but orders for export have been obtained from England which compensate for the falling off in sales to Germany.

The Paris-Orleans railway has placed an important order for rails with the Comptoir Siderurgique, and other railway companies are busy preparing specifications and will soon be coming into the market for large quantities of rails and accessories.

Belgians Are Operating 22 Blast Furnaces

Brussels, July 7.—According to government statistics the number of active furnaces in Belgium has remained unchanged since last March. Twenty-two furnaces are operating. This is eight more than on Dec. 31, 1921, but is 60 per cent less than the average prewar number.

Pig iron production during May was slightly above April figures and exceeded the March output by 5000 tons. The average prewar production was about 45 per cent higher than present output.

Production of raw steel during May exceeded the April output by 20,000 tons or an increase of 20 per cent. The following summarizes the statistics:

	Active blast furnaces	—Metric tons— Pig iron	Steel ingots and castings
May, 1922	22	118,940	118,300
April, 1922	22	113,820	96,730
January, 1922	17	94,210	76,670
Monthly average 1921	..	73,032	65,876
Monthly average 1913	54	207,058	203,552

Strike Clouds Still Threaten

Drastic Action by Government Looms in Coal Situation—Fuel Shortage More Seriously Blocking Industrial Recovery—European Outlook Is Better—May Cut Down Amount of German Reparations

BY JOHN W. HILL, FINANCIAL EDITOR

FAILURE of the President's plans for peace in the coal industry is an adverse development of great magnitude. Immediate and drastic action must now be taken by the government if the country is to be spared a serious fuel famine. Industry is already getting a foretaste of what will develop on a wide scale if the shortage is not alleviated within the very near future.

Regardless of recent agreements with Secretary Hoover, prices are skyrocketing for such coal that is available. With fewer furnaces in blast and steel works operations hampered, production which has been climbing steadily in the steel industry since July of last year may drop this month as the direct result of the strikes.

Peace talk in the railroad strike is again heard. A favorable development has been the refusal of maintenance of way men to walk out in great numbers. The chief threat of the shopmen's strike lies in its probable curtailment of car repairs. The number of available idle cars in good order of around 225,000 is below normal, while the idle cars in bad order is near 200,000, more than should be the case.

Once coal shipments are resumed on a large scale, the crop movement begins and with continued exceptionally heavy merchandise traffic, the strain upon the railroads may cause a breakdown. A car shortage in the fall seems to be one plain indication.

Developments in quarters untouched by the labor disturbances have been favorable. Money rates are working still lower, the Bank of England has reduced its rediscount rate to 3 per cent, the bond market has been buoyant in response to lower money rates and the European crisis is clearing. Curiously enough the stock market has continued firm and undisturbed by the strike developments.

Of chief importance is the improving outlook for Europe. Germany has met her July 15 reparations payment, her government has not fallen and the mark has recovered from 18 cents a hundred to 22. Meanwhile hints come from abroad of a plan for Britain to cancel its loan to France, which country in turn would forgive an equal amount of its reparations claim upon Germany. By this means Germany's reparations would be cut from $33,000,000,000 to $12,000,000,000.

She would be given a chance to set her financial house in order, stabilizing the mark and meet her obligations. This is attacking the heart of European difficulties. Adoption of the plan, without indulging in futile hopes that America will lead the way to cancellations, will make possible revival of the abandoned plan for an international loan to Germany. The present condition of the investment and money markets of Great Britain and in this country is highly probable for such a loan.

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Wholesale and Retail Prices	June 8
Farmer Purchasing Power	June 1
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112 Years of Prices	March 30

The Barometer of Business

WEEKLY COMPARISON

	Last week	Week before	One month ago	One year ago	1913
Business failures	390	306	408	290	300
Cash Ratio Fed. Res. system	77.3	76.8	77.3	61.6	.....
Loan rate, 4-6 months, N. Y. (per cent)	4	4	4	6¼-6½	5¼-6
Aver. 20 Ind'l. shares	$91.88	$91.63	$89.21	$65.22	$75.50
Aver. 20 Rail shares	$86.06	$86.85	$83.34	$70.26	$103.50
Aver. 40 bonds	$80.96	$80.51	$79.99	$69.25	$93.00
Car loadings (week ended)	876,896	877,856	750,645	774,808	*891,621
Bank debits 165 cities (000 omitted)	$8,823,923	$8,648,618	$9,638,419	$7,523,338†	.....

*1920. †161 cities.

FOREIGN EXCHANGE (Demand)

	Normal	July 15 (close)	Week before	Month ago	Year ago
Sterling	$4.86	$4.44¼	$4.43⅞	$4.49	$3.36
Francs	19.3c	8.29c	7.89½c	9.12c	7.82c
Lira	19.3c	7.89½c	4.44½c	5.21c	4.63c
Marks	23.8c	0.22⅝c	0.19⅝c	0.36c	1.31c

MONTHLY COMPARISON

	June	Month before	Year ago	Monthly average 1913
Dodge building awards in 27 states	$343,440,000	$362,590,000	$235,000,000	$71,450,000
Business failures: Number	1740	1960	1320	1336
Liabilities	$38,242,000	$44,402,886	$34,639,000	$22,723,000
Excess of exports	†$54,000,000	$104,000,000	$124,798,393	$54,406,000
Excess of gold imports	†$5,587,339	$10,630,000	$57,108,865	*$630,716
Bureau of Labor Price Index	†148	143	145	100
Bradstreet's Price Index	131.0	129.2	115.9	100
Economist's British Price Index	4389	4372	4810	2717
Cost of Living Index	†154.8	154.7	167.6	100
New incorporations	$297,557,000	$988,193,000	$675,977,000	$172,301,000
Railroad net earnings	†$60,880,000	$50,256,800	$37,081,000	$59,900,000

*Monthly average export prices. †May.

The Business Trend

July 20, 1922

TRADE TODAY, TOLD BY IRON TRADE REVIEW CHARTS

GENERAL SITUATION—Strike crisis at critical stage; drastic action by government looms in coal situation as arbitration efforts fail; serious effects of fuel famine upon business recovery beginning to be felt; European crisis believed clearing.

INDUSTRIAL ACTIVITY—Steel industry suffers first blow from coal shortage; blast furnaces stop and serious industrial curtailment threatens.

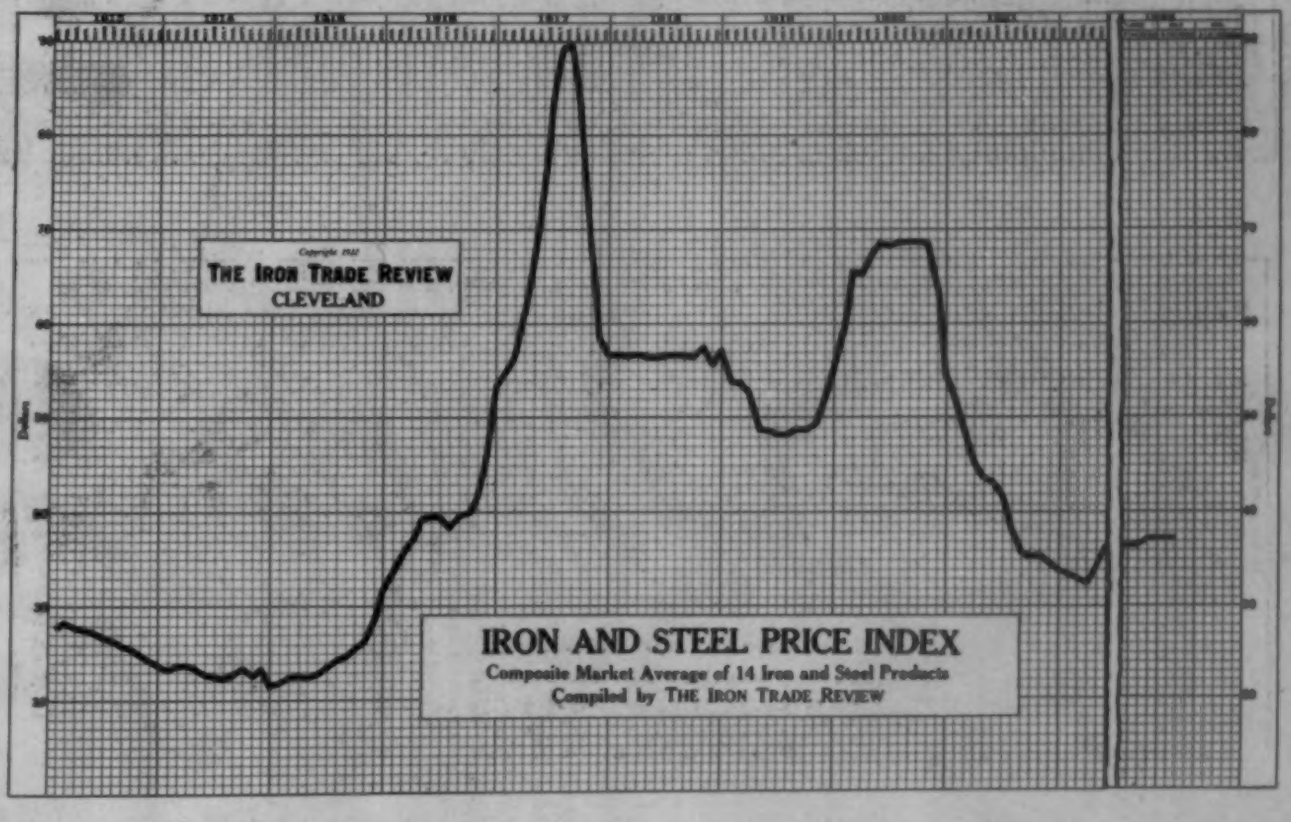
BANK CLEARINGS—Check exchanges in United States in June, 4 per cent over May and 16 per cent over June, 1921; reflects revival.

RAILROAD TRAFFIC—Car loadings of general merchandise continue high; shopmen's strike hampering traffic and reducing car repairs; car shortage certain.

SECURITY PRICES—Strength of securities in face of current adverse factors reassuring; bond prices strong; hints of German loan plan again heard.

CREDIT CONDITIONS—Bank of England rediscount rate falls to 3 per cent; faith in European recovery indicated; American money easier.

EMPLOYMENT—Employment Chart reflects enormous industrial expansion in first half of 1922; strikes only present barrier to further gains.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CLEVELAND
IRON AND STEEL PRICE INDEX
Composite Market Average of 14 Iron and Steel Products
Compiled by THE IRON TRADE REVIEW

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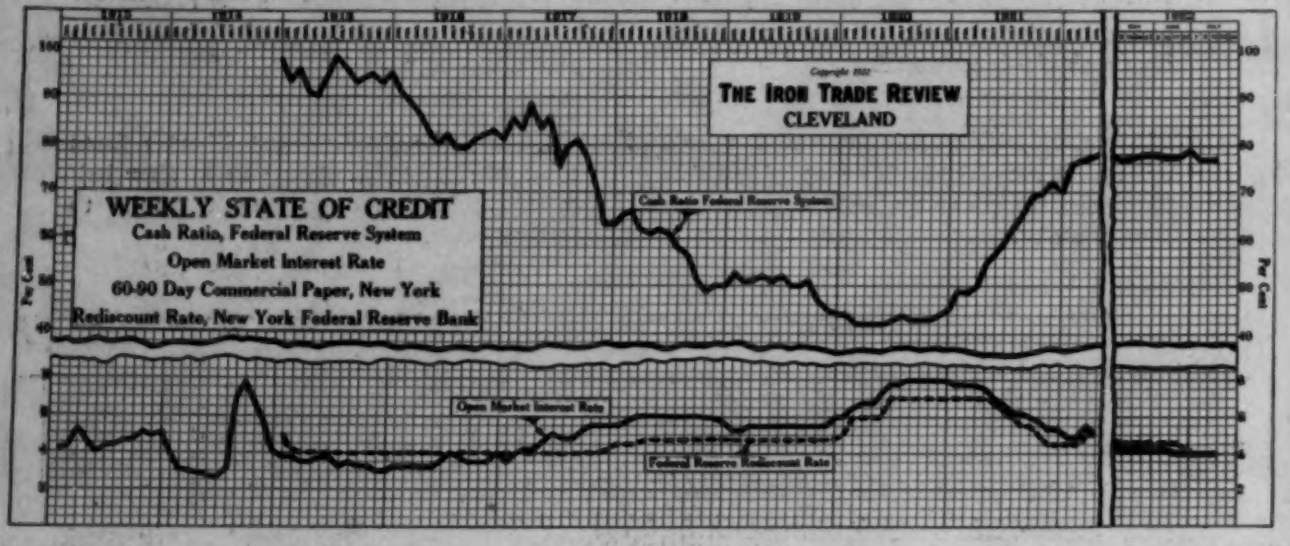
CLEVELAND
40 Bonds
50 Stocks
WEEKLY SECURITY PRICES
Average of 40 Bonds
Average of 50 Railroad and Industrial Stocks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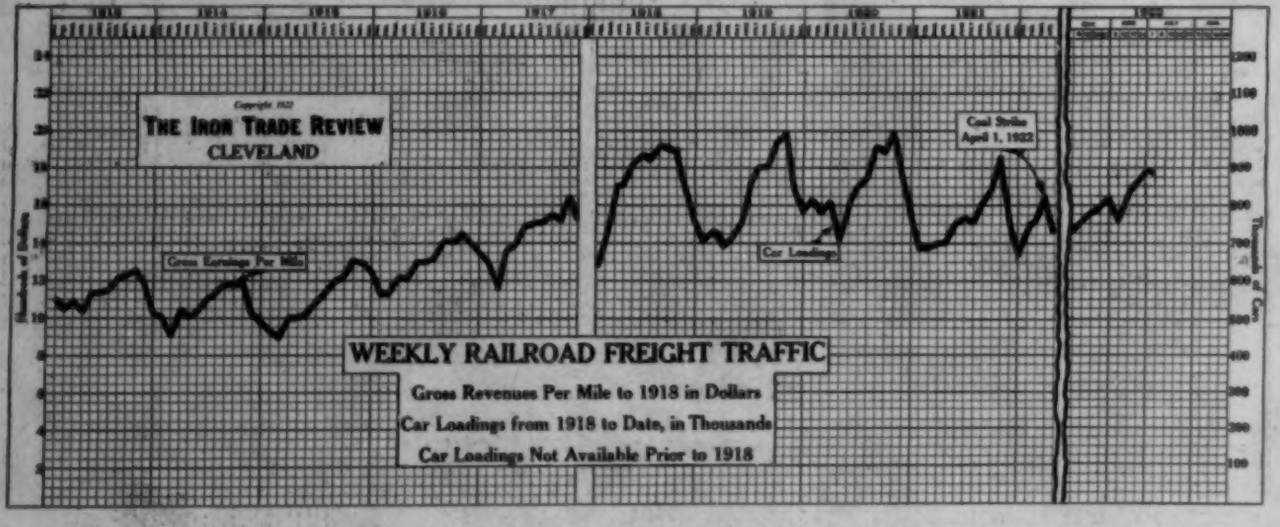
WEEKLY STATE OF CREDIT
Cash Ratio, Federal Reserve System
Open Market Interest Rate
60-90 Day Commercial Paper, New York
Rediscount Rate, New York Federal Reserve Bank
Cash Ratio Federal Reserve System
Open Market Interest Rate
Federal Reserve Rediscount Rate
Per Cent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Coal Strike
April 1, 1922
Gross Earnings Per Mile
Car Loadings
WEEKLY RAILROAD FREIGHT TRAFFIC
Gross Revenues Per Mile to 1918 in Dollars
Car Loadings from 1918 to Date, in Thousands
Car Loadings Not Available Prior to 1918

BANK CLEARINGS
Monthly Check Exchanges in United States
Compiled by Financial and Commercial Chronicle
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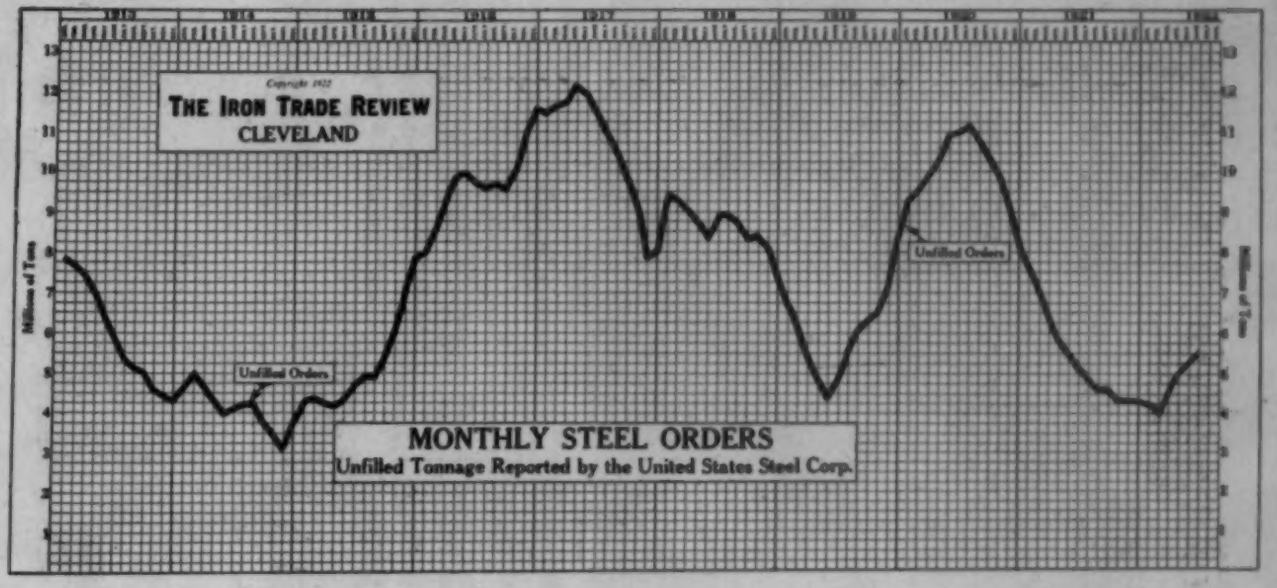
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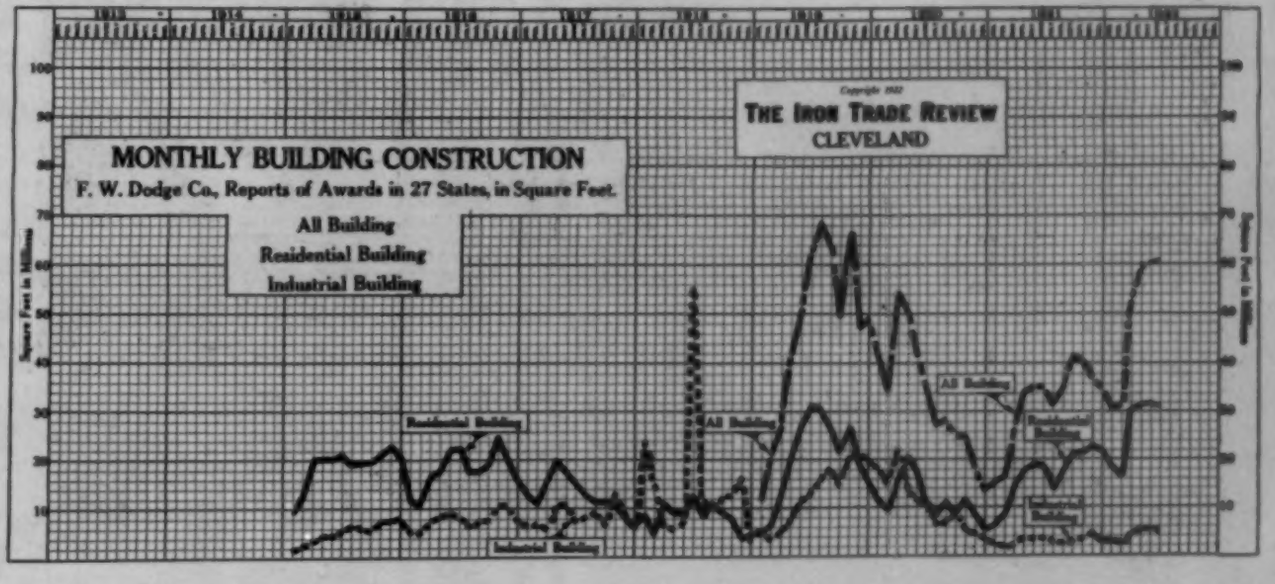
Unfilled Orders
Unfilled Orders
MONTHLY STEEL ORDERS
Unfilled Tonnage Reported by the United States Steel Corp.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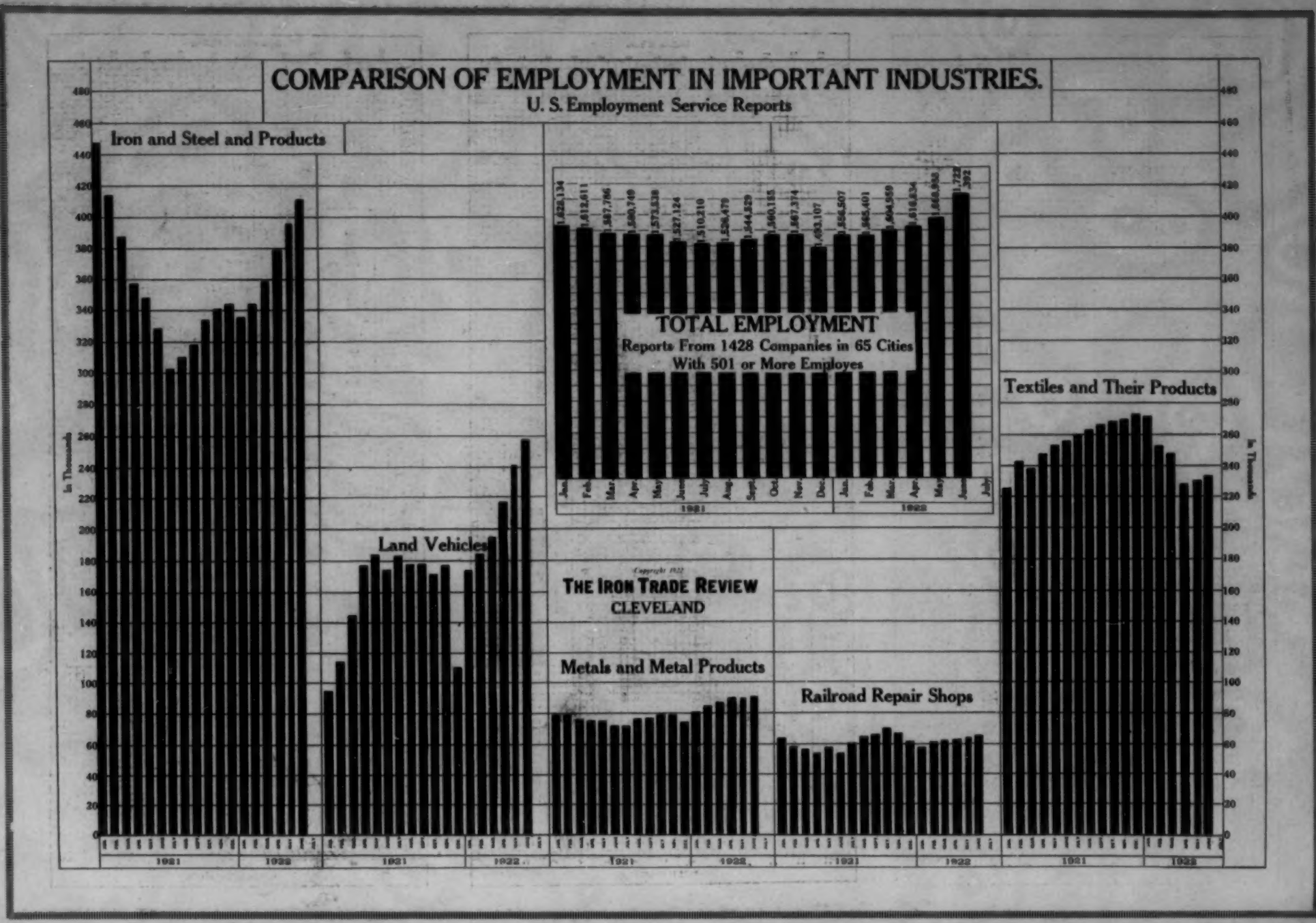
MONTHLY BUILDING CONSTRUCTION
F. W. Dodge Co., Reports of Awards in 27 States, in Square Feet.
All Building
Residential Building
Industrial Building
All Building
Residential Building
All Building
Residential Building
Industrial Building
Industrial Building


COMPARISON OF EMPLOYMENT IN IMPORTANT INDUSTRIES.
U. S. Employment Service Reports
Iron and Steel and Products
Land Vehicles
TOTAL EMPLOYMENT
Reports From 1428 Companies in 65 Cities
With 501 or More Employes
1,828,134
1,612,611
1,587,786
1,580,749
1,573,538
1,527,124
1,510,210
1,526,479
1,544,529
1,560,185
1,567,374
1,483,107
1,556,507
1,565,401
1,604,959
1,616,834
1,668,968
1,722,392
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Metals and Metal Products
Railroad Repair Shops
Textiles and Their Products
In Thousands
1921
1922

Practical Training for Foremen

A Simplified Course in the Study of Industrial Engineering To Enable Group Leaders To Interpret and Apply Rules of Sound Business Practice—Their Functions, and Relationship to Capital and Labor

BY P. L. BURKHARD

Chapter IX—Incentives

INCENTIVES is the sixth principle with which we deal as industrial engineers upon our own jobs. An incentive is not the reward for strenuous activity but for result. Strenuosity is usually responsible for more waste than product, a condition which we must consider when discussing incentives. The incentive should be so applied as to make the planning and control effective. The incentive is the step which enlists the will of the worker to do his share in securing an effective productivity.

Incentives encourage the cutting out of wastes through more concentrated effort, and in practice an intelligent wage incentive increases the net result yet requires the expenditure of less energy. In other words, energy previously expended in waste effort is now directed toward results.

Year after year we see that men are accomplishing more than would have been considered possible the year before, and yet the accomplishment has been secured with greater ease. This is due to elimination of waste. Wage payments should encourage greater waste elimination.

Under the existing scheme of economic control the greatest incentive is the wage, although there are some incentives which are nonfinancial. It is with the wage incentive we are most deeply concerned as it is the vital point in the relation between employer and employe.

All wage payment plans do not offer the same incentive. In many cases the wage plans discourage, rather than encourage, effective productivity, providing no incentive whatsoever for individual application.

Before discussing various incentive plans let us recognize the fact that any wage payment should encourage the workers to utilize to their best advantage the elements at their disposal, eliminating the wastes in the activities over which they exercise control by rewarding effective productivity in proportion to their effort to obtain it. We should ask ourselves:

1. How effective is the present plan of wage payment in the shop?
2. Does it encourage workers to obtain always an effective productivity?
3. Does it amply reward them for individual application?
4. What plan, if any, would be more effective?
5. How may that plan be adopted and applied and with what results?

Intelligent supervision is essential under any wage payment plan but as the incentive becomes more scientific in its application the supervision becomes less of "making men work" and more and more of "leading, helping and instructing so that men can produce effectively."

Time-Work System

The first system free man worked under was that of time work. The employe sold his time for a given rate. Man's time, therefore, became a commodity, the employe seeking as high a rate as he could secure, the employer seeking as low a rate as possible. Competition entered in for time, employes underbidding each other for their time and competitive prices were determined largely by the law of supply and demand. This system is comparatively recent in origin as it has only been a few hundred years since workers have been free men.

In the days of feudalism, abolished in England not so many years before the development of America and abolished in Russia in this very century, men belonged to the soil. All land was held by the feudal lords and the workers were neither free to come nor leave upon their own volition.

With the end of feudalism came the wage payment system, and the first plan of wage payment was the time rate. It was then that the relation of employer and employe, as we recognize it today, was created. Time work is the most simple plan of wage payment. It is also the most general. Its terms are, so much per hour, so much per day or so much per week.

The incentive is there but it is very ineffective. The reaction of the time work plan upon the worker is to obtain as much money as he can for as little work as he can do. On the other hand the employer tries to get as much work as he can for as little money as he can pay, with possibly a few exceptions. As a rule there is no fixed amount of work to be performed, nor is there a fixed reward for a certain quality of output.

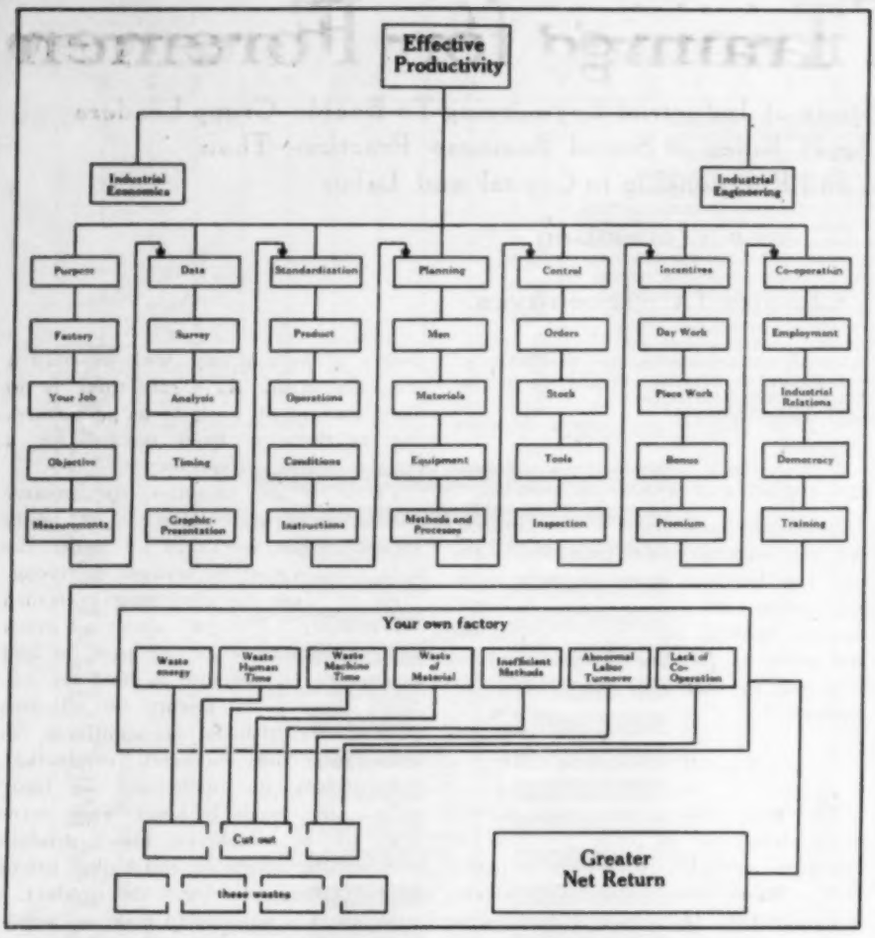
There is no incentive for greater effort or concentration. The only reason a man works at all under the time rate system is because he recognizes he must do something in return for his pay. He does about as much as he thinks he is getting paid for and he hustles just enough to hold his job. Since there is no reward for effective productivity, that is, no additional remuneration for increased production, nor penalty for inefficiency or time-killing, the result is lower wage earnings for all employes, lower production for the employer and higher prices to the public who buys the product.

While it is possible to make an application of the principles of industrial engineering in connection with a time-working system, it is impossible to realize more than a fractional part of the advantages which can be gained if the application is made with an incentive which rewards for individual effectiveness together with penalty for failure to maintain standard or normal result.

Furthermore, time work encourages giving slight increases to workers of long employment. A new worker coming in, working alongside the older employe and producing much more, receives a lower rate of pay. He sees the injustice of the plan, and the result is that the new worker curtails his production to the level of less efficient.

The only tangible encouragement or incentive that a man can have under a time rate system is that he may by years of faithful work earn a higher rate as his employment continues with the one firm. This is discouraging to the average man. The employer as a rule has no certain means of knowing which men are effective producers and which are not. In these shops foremen still set the rates of the workers and personal feeling and prejudice cannot help but enter in.

The time rate system is but a temporary expedient and will give way



ELIMINATION OF WASTE THROUGH APPLICATION OF PRINCIPLES OF EFFECTIVE PRODUCTION

to scientific wage incentive as competition becomes keener and the less efficient manufacturer is forced to struggle to remain in business any length of time.

In the natural evolution of wage payment plans the piece-rate system followed time rates as it was early recognized that the worker should be paid for the work he does. Time has no value unless engaged productively. A man might be hired at 50 cents a week yet if he remained inactive he wouldn't be worth that. Employers do not wish to buy men's time, but the effort which can be expended in the time. It followed naturally that time was translated into terms of pieces and a piece rate was offered to encourage effort.

Employes were quick to see this. An efficient worker realizing that he could produce possibly two to four times as much as he was producing, demanded piece work.

In some instances piece rates have been set two high, based on inefficient production under time rates. The resultant cutting of rates is an evil. Its psychological effect upon the worker is destructive and today we note a curtailment of production even under the most scientific form of management.

The theory of piece rate is that the production is up to the employe, and the employer doesn't have to be concerned, for if production is high the employe receives high pay, and if production is low the employe receives less pay; that is, the piece costs a predetermined price regardless of the time spent. This means that if the rate on a certain job is $1 it makes no difference how many hours it takes, one hour or eight hours, as long as the firm pays $1.

Drawback of Piece-Work Plan

The fallacy of this is apparent. It fails to take into consideration a number of factors:

1. Money tied up in machines.
2. Cost of supervision.
3. Administrative expenses.

For instance, if 100 men take eight hours to do one hour's work, the overhead and burden is tremendous. Let us say that in a plant the burden is $1000 a day each man produces one piece per day for which he receives $1. The burden must be distributed over 100 pieces which have been produced, as likewise must the payroll.

Burden	$1000
Payroll	100
Total cost	$1100
Number of pieces	100
Cost per piece	$11

If each of the 100 workers produces five pieces per day the result would be as follows:

Burden	$1000
Payroll	500
Total cost	$1500
Number of pieces	500
Cost per piece	$3

This shows conclusively that production should not be left up to the workers. We might find just such a situation if workers are fearful that a cut will come in their rates if they earn more than the management believes they should receive. This brings us back to the greatest objection. Rates have been cut, often slashed mercilessly, as the workers became more productive and earnings were greater than the market rate of labor in the community.

As soon as the workers found out that by increasing output the rate would be cut, they held back production, and thereby the theoretical advantages that piece rate held over time rate were lost. It is almost universal to find the man on whose work a price has been set to produce no more than sufficient to earn the amount of pay which he believes the employer will permit him to earn.

You may argue that piece rates can be set scientifically, and they can be guaranteed. This is open to debate, because while you can set a scientific piece rate you cannot guarantee it. As long as prices go up you can guarantee the piece rate, as you will find it necessary to advance rather than cut the rate. But on a falling market the piece rate must bear its share of the general cut.

Piece rates, generally speaking, are too high, and workers are not producing at their capacity.

Another weakness of the piece rate system is the practice of setting the rate haphazardly, a job which has been left largely up to the foreman, a man who has enough to do without attempting to estimate rates. Piece rates may be prolonged if standards are intelligently established by time, motion and fatigue studies, and if it is understood in advance that certain adjustments will have to be made from time to time.

A factory can be just as inefficient under piece rate as under time rate, but generally production under the piece rate work is more satisfactory.

Piece rate is a step towards progress, but there are more recent and more scientific developments.

Frederick W. Taylor was the first man to offer a scientific improvement. His plan is called the Taylor differential piece rate. This plan provides for a standard rate for production up to standard, and a correspondingly higher rate per piece when production is greater than the task set. In illustration of this: A man might receive a rate of 2½ cents per piece up to 20 pieces per hour, or 3 cents per piece if he produces 20 or more pieces per hour.

Under the Taylor differential piece rate the task as recommended by Mr. Taylor is so hard that only a first-class man can perform it. This does not bring the incentive within the reach of the average worker. This plan has not been widely adopted probably for that reason, and also because it is still a piece rate system, which suggests the many other abuses.

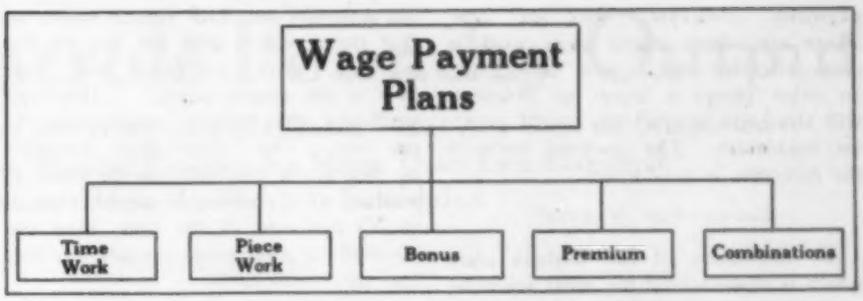
Bonus and Premium Systems

To overcome the many objections of piece rate various bonus and premium plans have been devised. The amount paid for producing more than the standard quantity is bonus. The quantity may be expressed in either piece or tonnage. There are four plans of bonus payment which have been widely adopted by manufacturers, both in this country and in Europe. These plans are: Gantt system, Emerson system, Knoeppel system and Priestman system.

Under the Gantt system wages are given an arbitrary boost of 25 per cent to 30 per cent when standard has been reached. If it takes longer than standard time to produce the work, the worker receives his day work rate only. An illustration of this: We have a man on an hourly rate of 60 cents who produces his standard of 300 pieces for the day. In addition to his $5.40 for 9 hours, he gets a 25 per cent bonus which amounts to $1.35.

The Emerson bonus is determined by the per cent of efficiency that a man shows in his work. Standard is set as 100 per cent. When a man reaches 66 2/3 per cent efficiency he begins to earn bonus. When he reaches 100 per cent efficiency he receives a bonus of 20 per cent over his daily rate.

The difference between the Gantt and Emerson plan is that under Emerson the worker earns bonus even though he does not reach standard. The incentive under the Emerson plan is a bonus at from 1 per cent at 66 2/3 per cent efficiency, to 40 per cent at 120 per cent efficiency.



VARIOUS INCENTIVE PLANS NOW IN OPERATION

The Knoeppel bonus is similar to the Emerson system, but provides an additional bonus of 5 per cent when a man reaches 100 per cent efficiency.

The Priestman system was worked out during the war in the Priestman Bros. Foundries, Hull, Eng., with remarkably fine results. It is easily adaptable for foundries, steel mills, rolling mills and industries which calculate their efficiency by tonnage.

If a given number of men in a given time are capable of producing under the day rate method of payment a certain quantity of product, or tonnage, then, by greater collective effort the same number of men in the same number of hours can increase the quantity of product in direct proportion to their effort; and it is then possible to advance their total rate of wage by a percentage equivalent to that by which the normal average has been increased. All production over standard effects the earnings of the workers in proportion as the actual output exceeds the normal.

As illustration let us consider a shop where the average production per day for last month was 1000 tons. This month, through greater effort the output averages 1100 tons, a 10 per cent increase in production. Ten per cent increase or bonus goes to every worker; that is, 10 per cent is added to the wage of everyone in the shop. A molder is receiving $30 per week. His bonus is $3. A subforeman is receiving $35 a week. His bonus is $3.50.

Everybody who contributes to the increase in production receives the bonus. The one distinct advantage of this plan is that the workers will not permit drones to idle away their time, thereby reducing the percentage which is to be distributed.

Premium Systems

There are four well-known plans of premium payment: Halsey plan, Rowan plan, Emerson premium plan and Bedaux plan.

Halsey argues that a man is entitled to a reward equal to one-half the value of the time saved. If the standard time for a job is 4½ hours, and a man does that job in 3 hours, saving 1½ hours, he receives one-half the value of the time saved. A man having saved 90 cents worth of time, receives a premium of 45 cents. Standards under the Halsey plan were set as an average of past performance.

Rowan modified the Halsey plan somewhat and developed a formula which is often confusing to the worker. However, it has been used by the Packard Motor Car Co. for 10 years, and has been very successful. In its application it is accurate in every respect, as it is based upon scientific time and motion studies. The formula is:

$$\frac{\text{Elapsed time} \times \text{Gained time}}{\text{Standard time}} = \text{Premium hours}$$

If standard time is eight hours on a job, and the job is completed in six hours, the time saved is 2 hours. Worked out, this gives 12/8 or 1½. In other words, the operator gets 1½ hours of the time saved.

Under the Bedaux plan the full value of the time saved goes to the ones who earn the premium. It is distributed, however, 75 per cent to the actual producer, and 25 per cent to foremen, helpers, tenders, etc. In fact everyone who helps make it possible for the operator, receives a share of the 25 per cent fund.

The foregoing are the various plans which are open to us for shop application. Because one plan works well in one plant there is no assurance that it will work as well in any other plant. However, an adaption of any one of these systems may be made, depending upon the nature of the work, the type of shop, etc. In studying this course we have one thing in mind, to get the viewpoint of the industrial engineer. We want to think in terms of the principles of effective production. As industrial engineers on our own jobs we must approach the application of the principle of incentives with open minds.

There are some factories where day work is the most effective type of

payment. However, they are few. There are others where piece work is most effective, these also being few. In other plants a bonus or premium will stimulate productivity to its greatest maximum. The purpose back of the incentive is production.

Bedaux Plan in Detail

As illustration of the Bedaux plan, which is undoubtedly the most scientific incentive, let us consider a battery of automatic screw machines all turning out the same size and type of screw. This will show that standards can be determined for machines as well as for operators.

We observe the work of one machine and over a 10-minute period note that 150 screws have been threaded. The actual performance, therefore, is 15 screws per minute, or if that speed is maintained it would be 900 per hour. (15 x 60 minutes = 900 screws).

If that production were to be maintained over an eight hour day we should expect to find a daily output of each machine of 7200 screws. (900 per hour x 8 hours = 7200). However, we know that there are many conditions which do not permit such constant output. The machine may be down for repair. No machine can perform constantly at its mechanical possibility.

It would not be unreasonable to charge off 10 per cent on every machine as a down-for-repair item. Frequent adjustments are to be made. The belting may require frequent attention. All this may be charged to repair. But there are also other factors which do not permit the maximum performance. Ten per cent does not cover these. The law of averages makes it a simple matter to calculate just what tolerances should be allowed, and the time per cent which should cover these tolerances.

The Bedaux engineers call this rest and delay. For illustration we might say that in taking into consideration the unvailable delays and eliminating the wastes which occur, it will be advisable to allow a rest and delay of 33 1/3 per cent. In other words, where our actual timings have shown that 150 screws were threaded in 10 minutes the standard is set at 150 screws in 15 minutes. This means that our standard is 10 screws per minute or 600 screws per hour. In an eight-hour day we will expect 4800 screws. (600 × 8 = 4800).

This, you may say, is too low a standard when the capacity is 7200. But before we say that the standard is too high, let us consult the records and find out what the actual output amounts to. Our search shows us that the actual is 3000 per day on this machine, after averaging the data over a six month period. However, we know that certain wastes may be cut out. Our observation convinces us that if the machine can be made to produce at a reasonable period, that is, 66 2/3 per cent of the time, then our standard of 4800 screws is not too high but very reasonable.

Now, what is our standard? Our standard is calculated in minute value. We expect a minute's effort to be expended in productive work every 60 seconds. That is, we expect every hour to show us 60 minutes worth of standard work. Our standard, therefore, is 60 minutes per hour.

The Bedaux plan designates these points as minutes. We want 60 minutes worth of work per hour, and 60 minutes is a standard hour's work. The illustration we have been following shows us that 10 screws is the standard for one minute. We are not thinking in terms of pieces, however, but in terms of minutes. One minute on this automatic screw machine requires 10 screws. Sixty minutes requires 600 screws. A standard eight-hour day requires 480 minutes of work, or 4800 pieces. What did our data show us? The data convinced us that we were getting 300 minutes work out of that machine. Yet, we were paying operators a full 480 minutes pay for getting 300 minutes work from the machine.

It makes no difference what the job may be, 60 minutes per hour is standard, whether the time value of a job is 600 per hour, 60 per hour, or one per hour. Standards are set in time values, and 60 minutes worth of work must be performed every hour to maintain standard.

Consider a heavy assembly job requiring four hours under actual observation and timing, to which we add a 20 per cent tolerance, giving the job a standard of five hours, or 300 minutes. If the job takes 350 minutes it is not being produced in standard time. If it is produced in less than 300 minutes, the time standard is beaten. We are all interested in beating time standards.

Four hundred and eighty points represent a full eight-hour day. Less than 480 points per day is a subnormal production if we consider normal to be what should be produced as an honest day's work on the part of every industrial worker employed. What incentive can we offer to produce standard?

Premium under the Bedaux plan, as has been said before, pays the full value of the time saved to those who produce more than standard. As has been noted there is a period of rest and delay which offers a margin for individual energy, which makes it possible to produce more than standard.

We have a right to expect standard from every worker. Premium is paid to workers producing more than standard.

If the operator on a battery of automatics produces 560 minutes of work in eight hours he has earned 80 minutes. The premium the operator has earned is the value of the minute times the number of minutes saved. The minute or point value of an operator whose hourly rate is 90 cents is 1½ cents. A 60-cent an hour man has a minute or point value of 1 cent.

If the operator of the automatics is receiving 90 cents an hour, and produces 80 minutes work over standard, the premium earnings are $1.20. (80 x 1½c = $1.20).

Standards set in time values remain constant. A standard which is scientifically established is what can normally be expected as long as the operator or process of manufacture remains unchanged. This does not mean that the hourly rate remains constant. The hourly rate changes as the index prices of commodities change. This is an economic law and must be recognized.

Under this premium plan there is no reason for the worker to hold back production. The standard is set as an absolute basis. It is never changed. The earning power of the worker is up to himself. Though he produces far more than ever before, his standard remains the same. His hourly rate does not change simply because he is earning more than workers in other industries. The fact that he is earning more is an indication that his firm is more prosperous than the competitors, and he is thereby assured of more continuous employment, less frequent layoffs and better working conditions. It is a promise of security and protection even during the lean years.

As the productivity of a machine and a man can be measured by point-hour values, so can the departments.

Miscellaneous Systems

There are still three incentives which are often resorted to. These come under the fifth classification of incentive plans. One is profit sharing. The second is commonly called profit sharing, but which is a distinctive form and should always be classified as investment privileges. The third is the periodic distribution of

(Concluded on Page 183)

System Controls Foundry Output

Records of the Progress of the Work in a Malleable Plant Are Kept on Simplified Forms—Four Men Handle Routine for More Than Two Hundred Molders—How the Work Is Scheduled

BY H. E. DILLER

HUNDREDS of patterns going into the foundry together with orders of from possibly a single casting to several thousand from the same pattern, require an exact system for keeping track of the work. The first requirement of such a system is accuracy which will enable the production manager to locate a pattern at any time and to find out just how many castings have been made from it. Also, it must enable the molder to know when the required number of castings has been made, and it should show the time spent on the job. While meeting these requirements it is important that the system be made as simple as possible. The plan which is employed by the Day-

FORM 118-16

CUSTOMER Rapid Co.,
Middletown, Ohio.

NO. OF PIECES 1000 PAT. NO. X 3145

SHIP VIA C. D. & T. Traction Freight

Ship 500 April First
" 500 May First

Hub Dust Felt Retainer

ORDER NO. 344415
REQ. NO. X 22210
DATE 3/1/22
WEIGHT EACH

DATE	NO. PCS.	TOTAL	DATE	NO. PCS.	TOTAL	DATE	NO. PCS.	TOTAL	DEL'Y REQUIRED

ORDER

Price_____

Terms_____

Pat. Eqt._____

Issued_____

Entd. on Order Record_____

FIG. 1.—PRODUCTION DEPARTMENT MAKES OUT THIS FORM IN TRIPLICATE WHEN THE ORDER IS RECEIVED. FIG. 2—FORM STAMPED ON THE COPY WHICH GOES TO THE TREASURER. FIG. 3—RECORD CARDS ARE KEPT IN SEVEN BOXES ON A REVOLVING TURRET SHELF

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

Customer: Rapid Co — Gates 4 — Patt. No. X3145

Name of Part — Aver. Wght. 1.5#

Date	Order No.	Pcs. Ordered	Total Ordered	Date	Order No.	Pcs. Ordered	Total Ordered	REQUIREMENTS	Bench No.	Bench No.
3/9	3445	1000						300 April 1st 300 May 1st	38	

Date	Defective	Date	Poured	Good	Total Good	Date	Poured	Good	Total Good	Date	Shipped	Total Shipped	REMARKS
		3/9	196	193									

FIG. 4—THIS CARD IS KEPT IN THE PRODUCTION OFFICE AND SHOWS THE NUMBER OF CASTINGS ORDERED OFF A PATTERN, AND THE NUMBER MADE AND SHIPPED

ton Malleable Iron Co., Dayton, O., combines both accuracy and simplicity. This company at its Dayton plant has eight air furnaces with a capacity of from 15 to 20 tons each, and frequently takes two heats a day from a furnace, although usually one furnace is down for repairs. When operating at full capacity, 210 molders are employed and the work in the production department is handled by a stenographer and three production men. However, if not more than 175 molders are employed the production control work may be done by three persons.

An order received by the company is sent to the general sales manager who examines it and makes a record in his own office as to the order and the price to be fixed for the castings. It then is sent to the production department which is in charge of C. P. Osborn. Accompanying the order is a statement of any promise made to the customer regarding production if any such promise has been made. However definite promises regarding production are not made unless necessary.

Makes Triplicate Orders

On receiving the order, the production department makes a triplicate copy. The original, shown in Fig. 1, is made on stiff paper and is sent to the shipping department. This gives at the top the customer's name and address, the number of pieces wanted and the pattern number. Below is a space for shipping instructions, in which are noted the route and the number of pieces to be shipped on certain dates, and any other instructions necessary for the shipping department. At the right is a space for the name of the casting, the order number, requisition number, date, and weight per casting. The remaining space on the front of the card is devoted to a column in which delivery requirements are noted, and to three sets of three columns; two columns of which give the date and number of pieces for each shipment, and one column in which the totals are kept. The back of the card also is ruled for two sets of these columns.

The first copy of this order is identical with the original, except that it does not have the ruled columns. This is sent to the foundry office. The second copy is made on a plain sheet of paper on which has been stamped a form for recording the price, terms, pattern equipment, date issued and date entered on the order record. This copy is sent to the treasurer's office.

All these three copies of the order leave the production department, but before they are sent out a copy of the order is made on the form shown in Fig. 4, which is retained in the production department. This is a card 9 inches wide by 7 inches high. These cards are kept in seven boxes on a

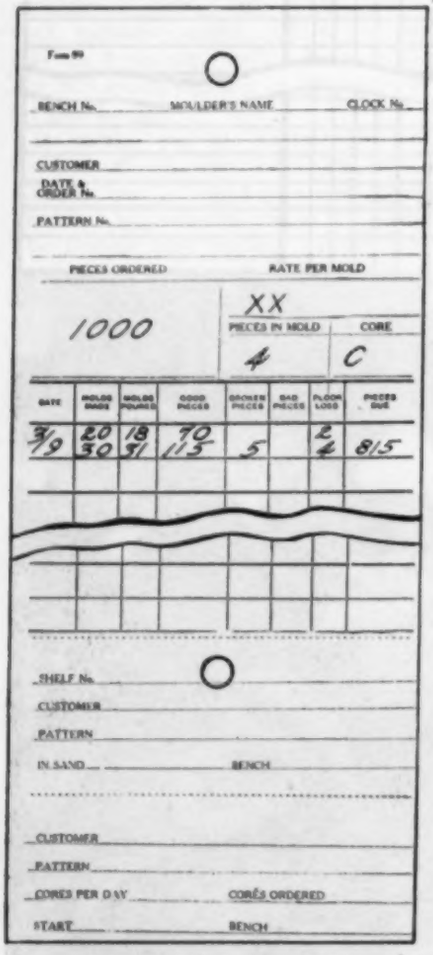


FIG. 5—THE CARD IS SENT TO THE MOLDER AND ONE STUB TO THE PATTERN VAULT AND THE OTHER TO THE CORE ROOM

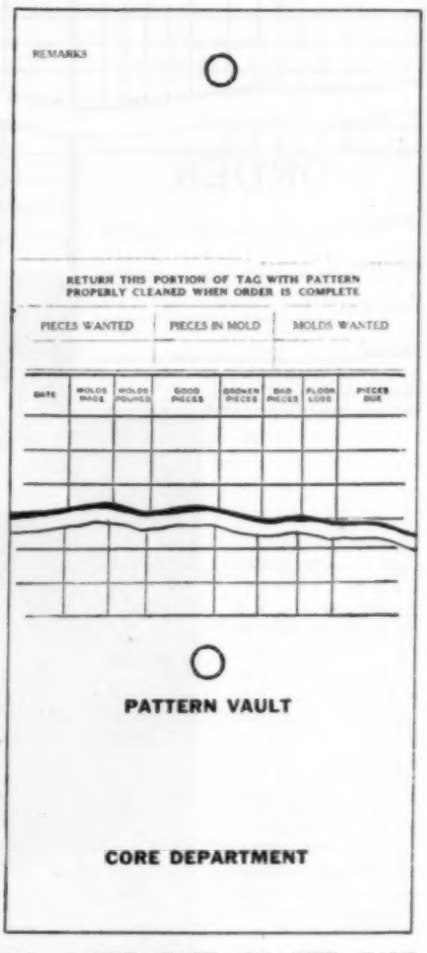


FIG. 6—THE BACK OF THE CARD SHOWN IN FIG. 5 IS USED FOR THE MOLDER'S CONTINUOUS RECORD OF HIS WORK

revolving stand in the center of a table as shown in Fig. 3. This allows four men, one working at each side of the table, to have ready access to the cards. Each box is numbered for identification and the clerk swings the shelf until the box he wants comes before him. The cards are filed according to customer's names. The largest customers have orders enough in the shop so that the cards from two or three of these customers fill a box. In such a case, the clerk easily can remember the number of the box containing the orders of the particular customer. However, holders for cards on which to index the customers whose orders are in the box, are fastened to the front of each box. In the one or two boxes in which orders are kept from a large number of firms sending in only a few orders, the cards are arranged alphabetically according to the customer's name. One box is used for orders pending, that is, which have not been sent to the foundry.

Steel Clips Act As Ticklers

The top of the card is divided into 31 spaces numbered consecutively from 1 to 31. By placing a steel clip in the card at the number corresponding to the date on which work on the order is to start, the card serves as a tickler. After the card is placed in the active file, the clip is placed over the number corresponding to the date on which molding on the job should be finished. This gives the production clerk an indication of when a molder will be ready for another job, and he can make preparations for putting a new pattern in the sand.

A space is reserved for recording

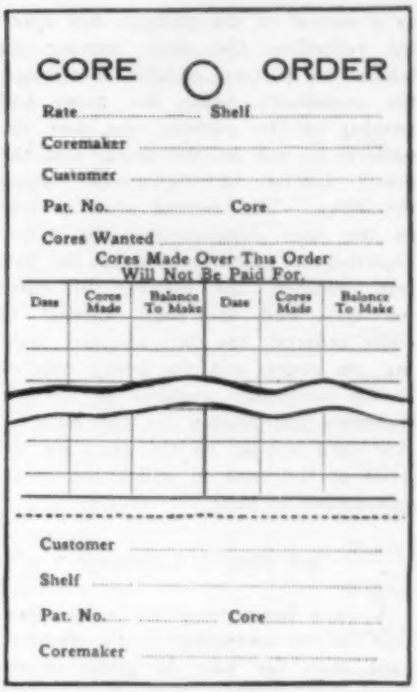


FIG. 7—THE CARD IS USED BY THE CORE MAKER AND THE STUB IS KEPT IN THE COREBOX STORAGE ROOM

the customer's name, the name of the part, the number of gates on the pattern, the average weight of a casting, and the pattern number below the line of numbers on the card, Fig. 4. Under this is a section for keeping tab on the orders. Two sets of four columns each are laid off at the left. The first of these four columns is for the date the order is received; the second for the order number; the third for recording the number of pieces ordered, and the fourth for totaling the number of pieces ordered in case more than one order is received for casting from the same pattern. At the right of these columns is a space for noting the requirements, namely the number of castings to be made before a certain day, or each month. Two more columns are left on this row for marking the bench number, at which the molds are being made.

The entire space remaining on the card is used for recording daily production and defective castings. The first two columns are for the date and number of defectives. These are reported from time to time and subtracted from the number of good castings previously reported. Beside these two columns are two sets of four columns each, in which are marked the date, number of castings poured, number of good castings, and total good castings. The total for the good castings is found by adding the number cast to the previous total. The shipping record is kept in the next three columns headed, date, shipped, referring to the number and total shipped. A final column is devoted to remarks about the job. The back of the card is ruled like the front except that all lines above the columns for recording the orders in are omitted.

Card Retained in Production Department

All copies of the order, Fig. 1, which is made out in triplicate, are sent to other departments, but the card, Fig. 4, is retained in the production department. When the copy of the triplicate order reaches the foundry, the man in charge of the pattern vault makes out two forms, one for the foundry and one for the core department. Each form has space at the top for information regarding the job and below are ruled columns for re-

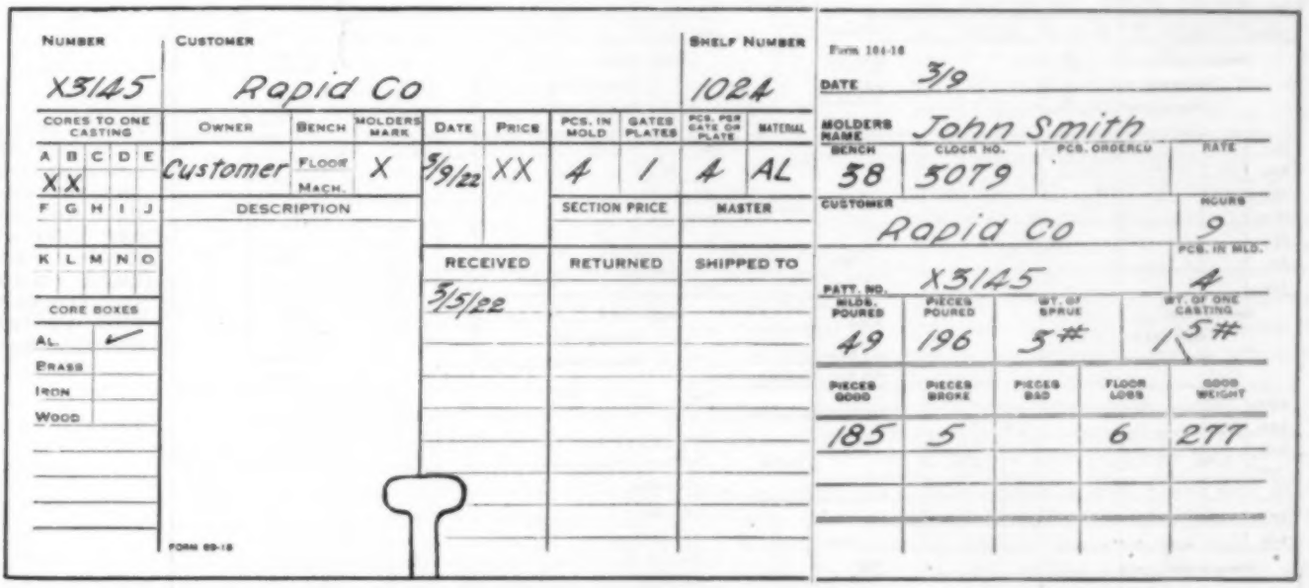


FIG. 8—CARD KEPT IN THE PATTERN VAULT TO RECORD THE MOVEMENTS OF THE PATTERN FIG. 9—THIS CARD IS FILLED OUT DAILY BY THE PRODUCTION CLERK ON HIS ROUNDS OF THE FOUNDRY

cording the number of the pieces made.

At the top of the molder's card, Fig. 5, is space for the bench number, and the molder's name and clock number. Below this are lines for the customer's name, the date and order number, the pattern number and a description of the pattern. Space also is provided for noting the number of pieces ordered, the piece rate per mold, number of pieces in a mold, and whether a core is used. Columns provide for daily marking the date, the number of molds made, number poured, total good pieces, broken pieces, bad pieces, floor loss, and pieces due. The record is kept by heats, so two figures usually will be placed in each column every day, excepting the one for pieces due. The figure for the pieces due is secured by subtracting each day the number made from the pieces due.

At the bottom of this card, Fig. 5, are two perforated sections, the one to be sent to the core department and the other to be kept in the pattern vault. The one sent to the core department has spaces for recording the customer's name; the pattern number and name, the number of cores wanted per day, and the total number ordered, the date the job was started, and the bench number where the cores are made. This card is sent to the foundry with the pattern when it is time to start the job. The one stub which stays in the pattern vault as a record of the pattern, has space for recording the shelf number on which the pattern is held in storage, the customer's name, the name and number of the pattern, the date the pattern is put in the sand, and the bench number of the molder doing the work. The second stub is sent to the core department. On it are recorded the customer's name, the pattern number, the number of cores per day, and the total number of cores ordered; the date to start making the cores, and the bench number of the coremaker working on the job. Columns are printed on the back of this card similar to the ones on the front of the card in which the molder's record is kept.

Card Sent to Coremaker

A card performing the same function for the coremaker as the molder's card does for him, is given to the coremaker. This core-order card, shown in Fig. 7, has a form at the top for recording the rate to be paid for the job; the shelf on which the coreboxes are kept; the coremaker's name; the customer's name; the pattern number; the corebox number, and the number of cores wanted. Below are two sets of three columns, in which the date, number of cores made and the remainder to be made are noted. A stub also is supplied with this form, to be kept in the corebox storage. This contains lines for the customer's name, shelf number, pattern number, corebox number, and coremaker's name. Like the molder's card this has a form printed on the back similar to the columns presented on the front.

A foreman in the foundry, representing the production department, selects the molder for each job. When the job is placed, the forms Figs. 5 and 7, which have been filled out are sent to the molder and coremaker respectively.

The first thing every morning a clerk from the production department goes around the foundry getting the record of the previous day's production from the cards, Figs. 5, at the molder's benches. This information is noted on a card, Fig. 9, and consists of the hours worked, the number of pieces in a mold, number of molds poured, number of pieces poured, number of good pieces, and the floor loss. The job is identified on the card by the date, molder's name, bench number, clock number, customer's name, and pattern number.

After a card has been made out for every floor, the production clerk takes the card to the trimming room where information is secured for filling in the weight of one casting. This is determined by weighing a number of castings on a weight-count scale. The trimming room also reports the total weight of good castings, the number

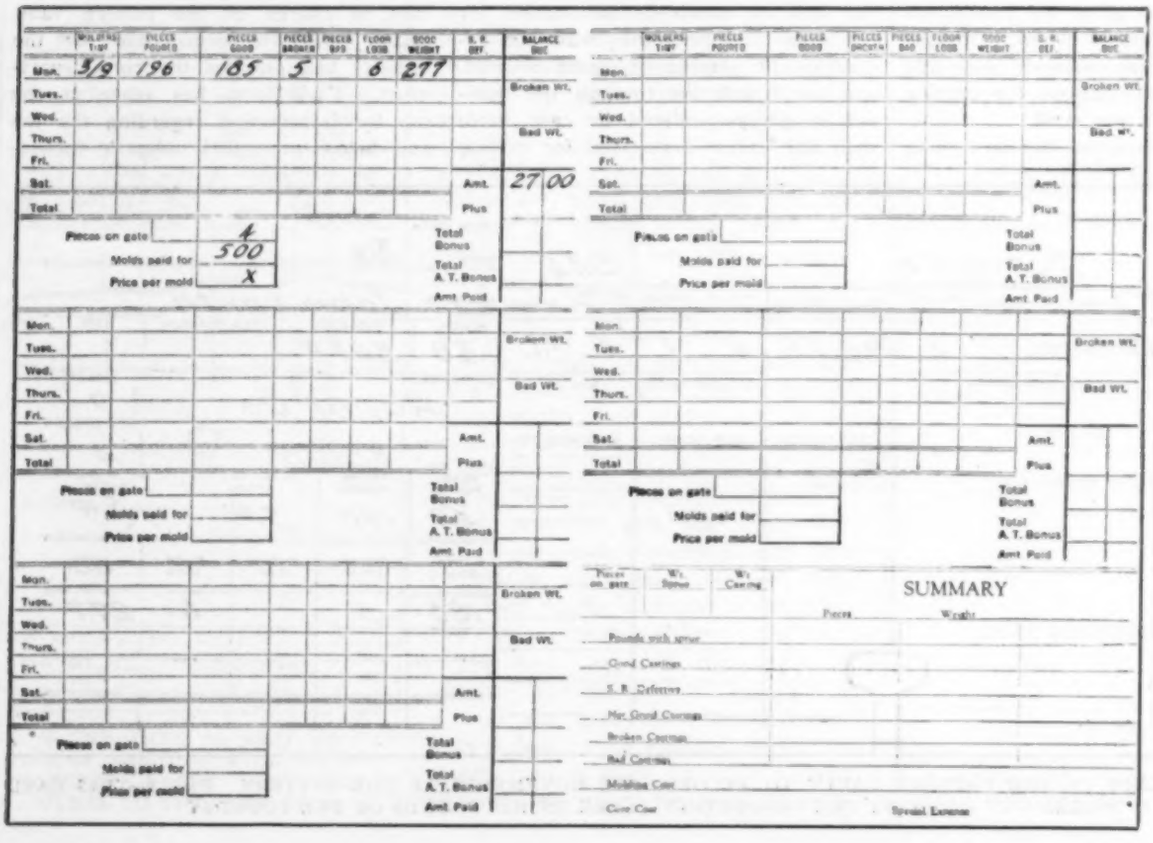


FIG. 10—DAILY PRODUCTION RECORDS OF THE INDIVIDUAL MOLDER ARE KEPT BY MONTHS ON THIS FORM AND SUMMARIZED AT THE MONTH'S END

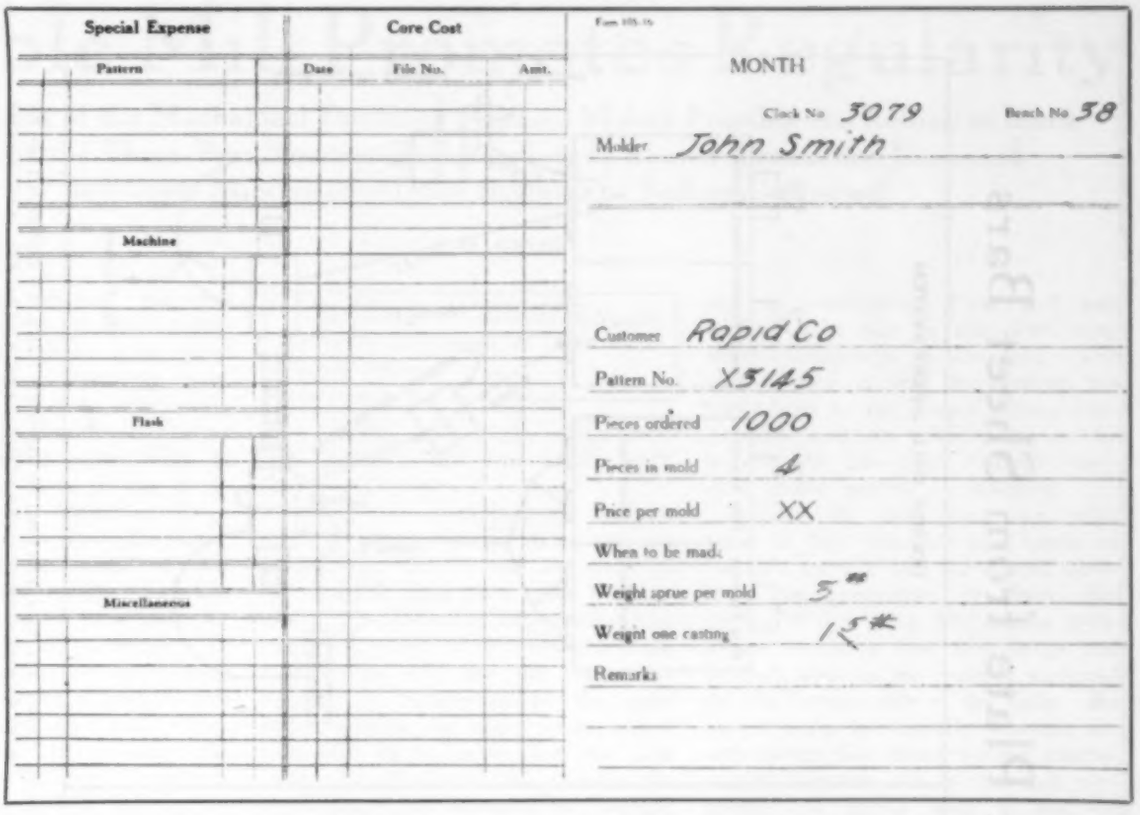


FIG. 11—AT THE RIGHT IS SHOWN THE FIRST PAGE OF THE FOUR-PAGE FORM MADE BY FOLDING THE FORM SHOWN IN FIG. 10 WHICH MAKES THE SECOND AND THIRD PAGE—AT THE LEFT IS SHOWN THE FOURTH PAGE

of broken pieces, and the approximate weight of a sprue.

The cards, Fig. 9, completely filled out are then taken to the production department and after being sorted and arranged alphabetically according to customers they are used to fill out the production cards, Fig. 4. The smaller cards also serve to make out the molder's payroll on the form shown in Figs. 10 and 11. Records of only one month are kept on one of these forms, so that a new sheet must be started on each job every month. Also, if a new molder is put on the job a new card must be made out as the cards are kept according to molder. They are folded to form a four page leaflet. On the front page, Fig. 11, the month and year are stamped, then the clock number, bench number and molder's name are written. Below are lines for the customer's name, pattern number, number of pieces ordered, number of pieces in a mold, piece price per mold, when to be made, weight of sprue per mold, weight of one casting, and general remarks.

The second and third pages, Fig. 10, contain three and two forms, respectively, for keeping a weekly record of castings. According to the method used by the company of dividing the year into 12 months of either exactly four or five weeks, the month always starts on a Monday. Thus, this year August begins on July 31 and ends on Sept. 2. The weekly forms are divided into columns for daily recording the molder's time; numbers of each, the pieces poured, good pieces, broken pieces, bad pieces and the floor loss; and the good weight. At the right hand side is a space for the balance due; for the weight of broken castings and the weight of bad castings; also for recording the bonus when one is due. At the bottom of each weekly form is a space for the number of pieces on a gate, number of good pieces, number of molds paid for, and the price per mold.

Summary Marked on Card

Besides the two weekly forms the card also contains a form for noting the summary of the month at the bottom of the third page, Fig. 10. This includes the number of pieces on a gate, weight of sprue and of casting, weight of castings and sprues, good castings, stock room defectives, net good castings, broken castings, bad castings, molding cost, core cost and special expense. The details of the special expense and core cost are kept on the fourth page of the molder's record card. The special expense includes expense for pattern, machine work, flask equipment, and miscellaneous expense.

One more form is used in connection with keeping track of the work; although this has nothing directly to do with the production department. This is the index card carried in the pattern storage, as shown in Fig. 9. On the top line of this card, the pattern number, customer's name and the number of the shelf assigned to the pattern are marked. At the left is a column for marking the cores used on one casting and the coreboxes, whether of aluminum, brass, iron or wood. This is indicated by checking the word printed on the form. The next column is devoted to the name of the owner of the pattern and the molder's mark, and it also indicates whether the pattern is to be molded on a bench, on the floor, or on a machine. This latter is accomplished by crossing out the two names which do not apply, as shown in Fig. 8 which indicates bench molding. At the right of the card is a space for noting the date, price, number of pieces in a mold, whether the pattern is on a gate or a plate, how many pieces are on a gate or plate, and the material of which the pattern is made. The lower portion of the card is given to a column for a general description of the pattern, and three other columns are provided in which to note dates received and returned, and to whom the pattern is slipped.

As may have been noted, the key cards in this system are those shown in Fig. 4 and Figs. 10 and 11. The cards shown in Fig. 4 are kept in the production department in boxes. This provides a ready means for finding the state of the order, while the other cards give a full record of the work done and costs.

Three Methods of Rolling Black Plate from Sheet Bars

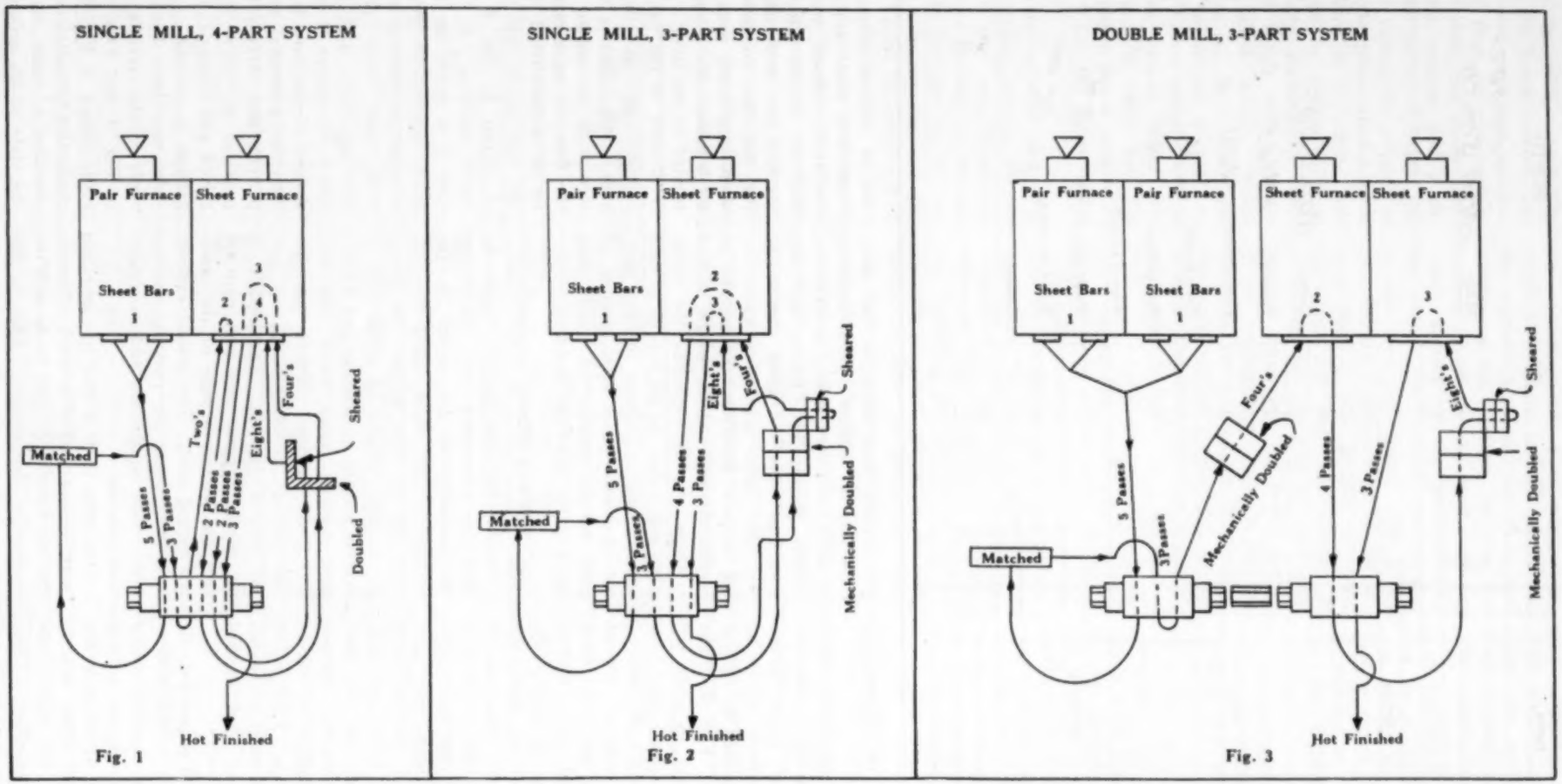


FIG. 1—VARIOUS STEPS INVOLVED IN ROLLING BLACK PLATE FROM THE HEATING OF THE PAIRS TO THE FINISHING OF THE PACK AS CONDUCTED BY THE MAJORITY OF TIN PLATE PRODUCERS ON A SINGLE MILL BY THE FOUR-PART SYSTEM. THIRTEEN DISTINCT OPERATIONS ARE ENTAILED. FIG. 2—THE INSTALLATION OF A MECHANICAL DOUBLING MACHINE ALLEVIATES THE LABORIOUS WORK ASSOCIATED WITH THE FOLDING OPERATION AND AFFORDS INCREASED PRODUCTION BY THE ELIMINATION OF ONE HEATING. FIG. 3—BY DOUBLING THE EQUIPMENT AND OPERATING TWO MILLS AS A UNIT ON THE THREE-PART SYSTEM, LARGER TONNAGES CAN BE HANDLED THAN BY WORKING TWO MILLS SINGLY ON THE FOUR-PART SYSTEM AND CONSIDERABLE BACKTRACKING IS ELIMINATED

Double Mill Promotes Regularity

Development of the Mechanical Doubling Machine Makes Possible the Rolling of Black Plate by the Three-Part System—Backhandling Is Abated, Production Increased and Costs Minimized—Three Systems of Rolling Compared

BY J. D. KNOX

The author is associate technical editor in Pittsburgh of THE IRON TRADE REVIEW.

AMONG the foremost problems confronting the tin plate industry today are those of increased production and lower operating costs, both of which bear close relationship one to the other. Production can be increased by placing more mills in operation but any move in this direction at present is threatened by a shortage of labor forces. Therefore, if output is to be stimulated in view of a depleted labor supply, tin plate makers are obliged to turn their attention to labor saving machinery. In the rolling of black plate for tinning purposes practically every step in the process is performed by hand. From the start of the tin plate industry the matching and doubling operations were done manually, but within recent years automatic matching and doubling machines have been developed, lightening to a considerable extent the burden entailed in the original method of doubling the pack of sheets.

The development of the mechanical matching and doubling machine beyond the experimental stage has led to a rearrangement of the various operations involved in the rolling of black plate, which in turn has lessened the number of steps and increased the output. In passing it is interesting to note that the recent change in rolling practice, made possible by the mechanical doubler, is one of the few progressive strides made by the tin plate industry since its beginning in this country 31 years ago. It is not the purpose of this article to describe the process of tin plate manufacture from beginning to end, but rather to point out the variation between the three methods of rolling black plate as conducted by several makers in this country today, namely, the single mill, four-part system; the single mill, three-part system; and the double mill, three-part system.

In any case sheet bars are the raw material for the black plates and are received at the tin mill in about 30 foot lengths, each piece being 8 inches wide. The thickness varies depending upon the length of the finished black plate. The bars are cut into given lengths to correspond to the gage and length of the sheet to be rolled, allowance being made for the side scrap. In explaining the process the reduction of steel intended for 30-gage, 20 x 28-inch stock will be followed through the mill.

The 30-gage black plate is rolled in packs of eight sheets each, measuring 20 x 56 inches when the uneven ends and sides are trimmed. The pack later is sheared in two making sixteen 20 x 28-inch pieces. Each mill operating on the four-part system includes a single stand of 2-high rolls and a combination sheet and pair furnace built side by side with combustion chambers at one end. The pair furnace is used for heating the sheet bars to the proper rolling temperature and the sheet furnace for heating the plates at different intervals in the process of reduction.

Usually 40 sheet bars are piled three or four high on the hearth of the pair furnace and are heated slowly to a temperature of about 1800 degrees Fahr. The pair heater withdraws two at a time with tongs and delivers them to the rougher stationed on the furnace side of the rolls. He passes them successively between the rolls about five times to the catcher on the opposite side of the mill who grasps the pieces with a pair of tongs as they emerge and returns them over the top of the upper roll. This is termed "roughing the bars." The screw boy between passes reduces the distance between the rolls by manipulating a screw-down lever.

The pieces then are matched, that is, they are placed one on top of the other with the longest on the bottom and the shortest on top, and are made to adhere by passing about three times between the rolls. The pair of plates in the roughened state are tossed along the standing to the sheet heater's helper who places them in the sheet furnace. When the temperature equivalent to that lost in the roughing operation is restored the sheet heater throws a heated pair of plates to the roller who gives it two or three passes between the rolls. The screw boy then separates the sheets, which were made tight by the pressure of the rolls, and replaces them one on top of the other. The doubler then loops one end over the other and flattens the bend somewhat with the heel of

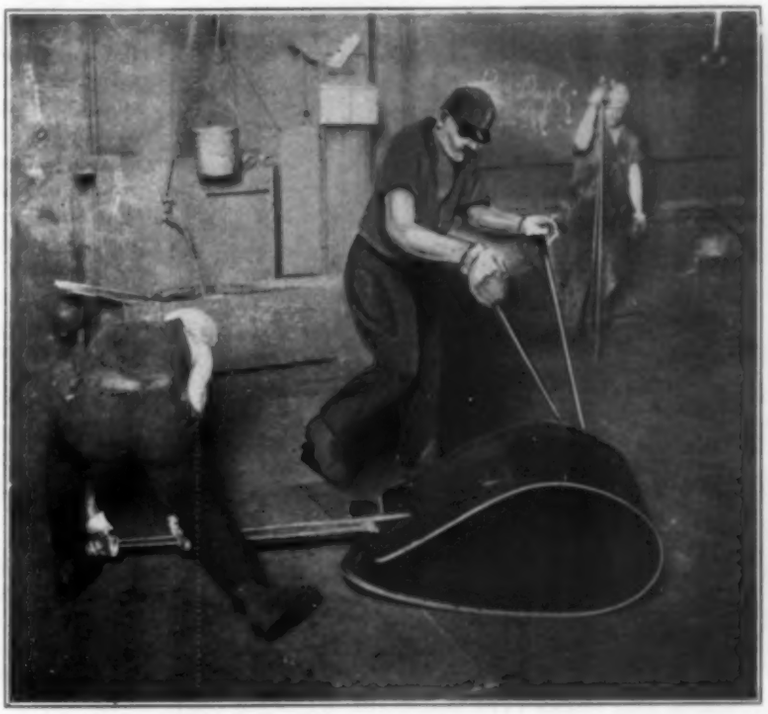


FIG. 4—DOUBLING BLACK PLATE BY HAND. THIS OPERATION IS ONE OF THE MOST TEDIOUS STEPS IN THE ROLLING PROCESS

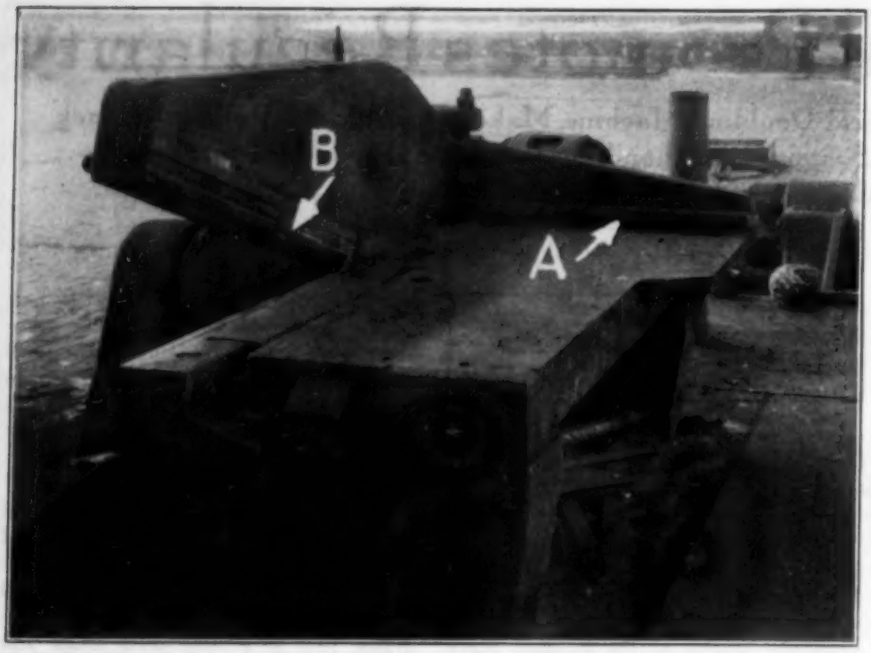


FIG. 5—LEVER-TYPE DOUBLING SHEAR SHOWING SQUEEZER AT THE REAR END OF THE TABLE AND THE SHEAR AT THE LEFT IN THE STARTING POSITION

his shoe. He then lifts the pack onto a table and places the folded end under a squeezer which flattens it making four thicknesses. The squeezer is built in conjunction with and at right angles to a crocodile-type shear, both units being actuated by a single motor. Fig. 5 shows a lever-type doubling shear and squeezer while Fig. 6 shows a combination squeezer and shear type machine used in the single mill, four-part system. The steel then is returned again to the sheet furnace for heating for the third time. When it is heated uniformly the pack of four sheets is passed between the rolls two or three times. The sheets again are loosened and folded lengthwise, the looped end being flattened under the squeezer. This gives a pack of eight sheets with one end completely closed and the other end partially. To prevent the sheets from buckling during reduction, one end of the pack is sheared off. The pack then is returned to the sheet furnace for its fourth heating and when brought to the proper temperature is finished to the desired length in about three passes between the rolls. Of the 13 steps entailed in the production of black plate by the foregoing method, four were required for heating the steel, hence, the application of the term "single mill, four-part system."

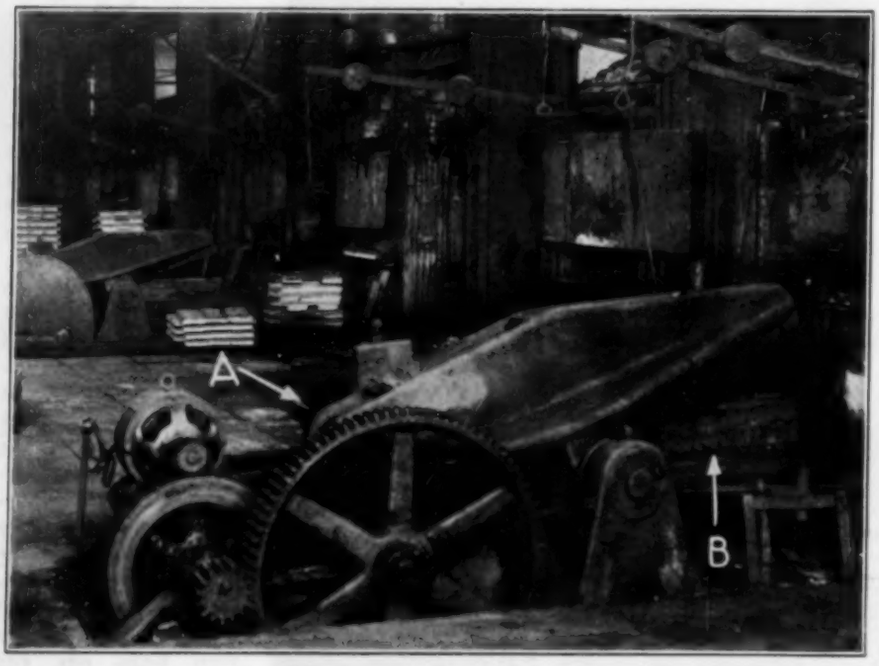


FIG. 6—COMBINATION SQUEEZER AND SHEAR-TYPE DOUBLING MACHINE USED IN CONNECTION WITH THE SINGLE MILL, FOUR-PART SYSTEM OF BLACK PLATE MANUFACTURE. *A* INDICATES THE SQUEEZER AND *B* THE SHEAR

By the installation of a mechanical doubling machine, which automatically matches and doubles the sheets in less time than is required manually, the number of heatings given the steel is reduced from four to three· hence the application to the process of the term "single mill, three-part system." Many types of mechanical doubling machines have been placed on the market, two of the most recent having been described in the Oct. 13, 1921 and the June 15, 1922 issues of THE IRON TRADE REVIEW. The doubling device on one of the machines consists of a folding table built at floor level and divided into two sections.

The matching arrangement includes four to six side and end fingers, which protrude through the floor, the number of fingers depending upon the size of the machine. The upper extremities of the matching fingers are mounted on a hinged joint so that a sheet or pack of sheets can be slid on the table from either end without lifting over the fingers. The end fingers function in unison as well as those at the side, all being operated by a single lever. The bedplate of the doubling machine is made so that a shear can be attached at right angles. The shear knives are arranged at the floor level, the top blade being actuated by the motor which operates the matching fingers and doubling table.

In performing the matching operation the sheets are placed on the doubling table in substantially the proper position or scattered. One pull of the level causes the fingers to shift the sheets edgewise and endwise, centering them in a pack on the doubling table. A pair of knives or holding arms, which are pivoted at one end and operate through an arc of 90 degrees, are brought down edgewise on the pack just before the two sections of the table begin to fold toward each other. These knives clamp the pack securely to the table and act as a divider for assisting in folding the sheets. By applying pressure on a footpedal the doubling leaves are brought together but before they reach the limit of their downward stroke the operating mechanism automatically raises the doubling knives to their starting position.

In the other type mechanical doubling machine, to which reference

previously was made, the doubling operation is completed by a set of rolls arranged in a horizontal position at floor level. The doubling knife is suspended from an air-operated plunger and when lowered its edge is positioned slightly above the gap of the rolls. The sheets are superimposed upon each other by matching fingers designed along the same lines as those serving the table-type doubler but are operated by compressed air. The pack then is forced into the grip of the rolls by the doubling knife and when the folded end comes in contact with an arm, which extends across the path traveled by the sheets, a limit switch automatically is thrown causing a reversal of the rolls. The doubled sheets are directed upward and when free of the rolls are ejected by a plate to one side to be gripped with tongs in the hands of one of the crew and sheared. It is obvious, therefore, that no labor is involved in lifting the pack during the doubling or shearing operations on either of these machines as is the case when the old-type combination doubling shear is employed.

As previously mentioned, an automatic doubling machine permits a single mill to be operated on a three-part system by reason of the fact that with one less reheating the packs can be given the same number of passes in the aggregate as was given under the four-part system and while their temperature is reduced by so doing yet no difficulty is encountered in doubling them mechanically. In addition, the installation of a mechanical doubler permits the mill to roll plates in much longer lengths than otherwise is possible because the laborious work entailed in hand-doubling cold sheets, which frequently are encountered in the production of lengthy stock, is eliminated entirely.

Under the single mill, three-part system, the sheet bars are heated, roughed in pairs, matched and matched-rolled in the same manner as was described under the "single mill, four-part system" but from here on there is a divergence in the two systems. After the sheets are matched-rolled they are doubled automatically and heated in fours, thus eliminating the necessity of heating in twos as is the procedure when working a single mill on the four-part system. The pack then is rolled, redoubled making eight sheets, one end sheared off to prevent bucking, reheated in eights and rolled to specification. It must be obvious, therefore, that by the elimination of one heating and one rolling several minutes are clipped off the rolling schedule per heat when working a single mill on the three-part system than when working it on a four-part system.

Where new installations are planned, the double mill, three-part system for rolling black plate will bear close investigation from the standpoint of production and lower operating costs. The adoption of this system requires double equipment, that is, two furnaces for heating the bars, two furnaces for heating the sheets, two mechanical doubling machines and two stands of rolls per unit, one stand being used for roughing down the bars and one for finishing of the sheets in packs. Where the driving medium is centralized leaving an odd number of mills on each side, as in the case of a 10-mill installation, the end stands could be operated singly on the three-part system and the others grouped in twos and operated doubly on the three-part system. If at any time conditions warranted a change from the double mill, three-part system, to the single mill, three-part system, little alteration to the equipment would be necessary.

The same steps entailed in rolling black plate on the single mill by the three-part system are followed on the double mill working the three-part system but the reduction is accomplished on two stands of rolls. The pairs are broken down and matched-rolled on the roughing stand of rolls, mechanically doubled, heated in fours, given the runover passes on the finishing stand of rolls, again doubled automatically but on a separate machine, sheared, heated in eights and rolled to the finished specification.

Under this system the roughing crew is composed of eight workmen and the finishing crew 10. While the number in the aggregate is the same as would be required for operating two single mills, yet the classification is totally different as shown in Table 1. When contrasted from a wage standpoint, the advantage of the double mill, three-part system, over two single mills each operating on the four-part system, is apparent because the three-part system practiced on a double mill affords the elimination of one roller, one rougher, two doublers and two doubler's helpers, and in their stead the employment of lower priced workmen, such as two doubling-machine operators, two heater's helpers, a rougher's helper and a roller's helper.

The various steps involved in the manufacture of black plate by the

(Concluded on Page 184)

Table I

Crews Required Under Various Systems

Single Mill Crew Four-Part System	Single Mill Crew Three-Part System	Double Mill Crew Three-Part System	
		ROUGHING STAND	FINISHING STAND
1. Roller	1. Roller	1. Rougher	9. Roller
2. Rougher	2. Rougher	2. Rougher's helper	10. Roller's helper
3. Catcher	3. Rougher's helper	3. Catcher	11. Catcher
4. Catcher's helper	4. Catcher	4. Catcher's helper	12. Catcher's helper
5. Screw boy	5. Catcher's helper	5. Screw boy	13. Screw hand
6. Heater	6. Screw boy	6. Pair heater	14. Heater
7. Heater's helper	7. Pair heater	7. Pair heater's helper	15. Heater's 1st. helper
8. Doubler	8. Pair heater	8. Doubler operator	16. Heater's 2nd. helper
9. Doubler's helper or pair heater	9. Doubler operator		17. Heater's 3rd. helper
			18. Doubler operator

Table II

Operations Entailed in Rolling Black Plate

by the

Single Mill Four-Part System	Single Mill Three-Part System	Double Mill Three-Part System
1. Heating the bars	1. Heating the bars	1. Heating the bars
2. Roughed (5 passes)	2. Roughed (5 passes)	2. Roughed (5 passes)
3. Matched	3. Matched	3. Matched
4. Rolled (3 passes)	4. Rolled (3 passes)	4. Rolled (3 passes)
5. Reheated in twos	5. Doubled	5. Doubled
6. Rolled (2 passes)	6. Reheated in fours	6. Reheated in fours
7. Doubled	7. Rolled (4 passes)	7. Rolled (4 passes)
8. Reheated in fours	8. Doubled	8. Doubled
9. Rolled (2 passes)	9. Sheared	9. Sheared
10. Doubled	10. Reheated in eights	10. Reheated in eights
11. Sheared	11. Finished (3 passes)	11. Finished (3 passes)
12. Reheated in eights		
13. Finished (3 passes)		

Handling Repetitive Work

Principles of Interchangeable Manufacture, by Earl Buckingham, 254 pages, 6 x 9 inches; cloth; published by the Industrial Press, New York, and for sale by THE IRON TRADE REVIEW, Cleveland, for $3.

Coming from the pen of an engineer who has had a wide experience in the field of interchangeable manufacturing, this volume should appeal to all who are interested in the problems of mass production of duplicate parts. Considering the fact that America's supremacy in the art of interchangeable manufacture never has been dangerously threatened by any other nation and that the Pratt & Whitney Co., with whom the author is identified, has played an important part in developing the industry the text certainly was prepared in a most auspicious environment for the production of an authoritative treatise on the subject.

Mr. Buckingham's book is divided into 13 chapters. The first two are devoted to the principles and fundamentals in interchangeable manufacture. In Chapter III the principal factors effecting machine design are discussed including choice of materials, clearances and tolerances, advantages of unit assembly and the application of interchangeable principles.

The next three chapters cover the preparatory work required in developing a schedule for production. The use of models is discussed and the detail of component drawings is outlined.

After explaining the importance of economic production and emphasizing the need of manufacturing data, factory costs, reliable information on overhead expenses, etc., the author goes into the subject of interchangeable manufacture proper. This treatise begins with suggestions for the selection of machine tools and other equipment, methods of checking and testing jigs and fixtures, and various means of clamping, chucking and holding work for various machine operations.

Perhaps the most important feature of manufacturing interchangeable parts is the extensive use of jigs, dies and gages. The author's experience in the world war, in which he was obliged to develop extensive gaging equipment for ordnance work on short notice, stands him in good stead in preparing the chapters devoted to the use of gages. The classification and accuracy of gages are discussed and the proper use of working and inspecting gages is explained. A great many kinds of gages are described and illustrated and the limitations for the use of each are designated. In accordance with the great importance of inspection and testing, the author has devoted a chapter to this subject in which he discusses the need of checking the part against the drawing and testing assembled mechanisms. The periodic inspection of gages and material is recommended.

Great as is the field of interchangeable manufacture, the author has detected the difference in conditions existing in various plants and therefore has made provision for the various requirements. Thus he has set aside a chapter for selecting assembly and also has devoted 10 or 12 pages to production methods for a shop where a comparative small amount of interchangeable parts is required.

Considerable emphasis is placed on the frequently neglected factor of service. The author shows how necessary it is to check up the performance of manufactured parts and to change specifications frequently in case defects are noted. The text is illustrated by nearly a hundred drawings and reproductions of gages, tools, etc., and the volume is well indexed.

* * *

Surveys Foreign Trade Outlook

Official Report of the Ninth Annual Foreign Trade Convention, 621 pages, 6 x 9 inches; cloth; published by the National Foreign Trade council, 1 Hanover Square, New York, and for sale by THE IRON TRADE REVIEW, Cleveland, for $2.50 postpaid.

This volume contains a stenographic report of the proceedings, discussions and speeches of the nine group sessions and the addresses of the general session together with a list of the delegates present the organizations and companies represented and the personnel of the convention. The principle subjects covered are as follows: Public education for greater foreign service, banking facilities for foreign trade, problems of the export manager, ocean carriage, export sales promotion, market conditions abroad, problems of the export merchant, export advertising, foreign credit and credit information.

The addresses are published in full and are followed in each case by the oral discussion which took place on the floor of the convention. The volume constitutes a timely survey of the present status of the foreign trade situation.

* * *

Producing and Selling Oil

Petroleum—Where and How To Find It, by Anthony Blum; 376 pages, 4½ x 6½ inches; cloth; published by the Modern Mining Books Publishing Co. and for sale by THE IRON TRADE REVIEW, Cleveland.

Through its daily contact with the purchase and use of various forms of petroleum the public in recent years has gained a new interest in the production of this remarkable fuel. Perhaps the most important information regarding oil which has appeared during the past year has had to do with the alleged increasing scarcity of the crude oil from which gasoline, lubricating oils and many other products are made. The United States geological survey, the oil companies, many gas companies and the governments of Great Britain, United States and Mexico have participated in the warning cry that the liquid fuel supply rapidly is being exhausted.

In view of these facts a great many persons, including manufacturers who use liquid fuel, will be interested in the book on petroleum recently written by Anthony Blum. While much of the information in the book pertains to the technique of prospecting, drilling and pumping, which naturally is of interest only to the producer, there is considerable material devoted

to the broader aspects of the industry such as the geology of petroleum, the history of the oil and gas industries, the appraisal of oil land, the life and yield of oil and gas wells, the marketing of petroleum and gas and the specifications for the various products of petroleum.

One chapter is devoted to a discussion of oil producing as a business and as an investment. Suggestions for investigating petroleum investment projects are given and in conclusion the author presents a number of brief maxims regarding investments.

* * *

Discusses Corrosion of Iron

Carnegie Scholarship Memoirs, Vol. XI, by J. Newton Friend, 161 pages, 5¼ x 8¼ inches; cloth; published by the Iron & Steel institute, 28 Victoria street, London, S.W.1, England.

In this volume of Memoirs, the Carnegie gold medallist, Dr. Friend, offers a series of reports dealing with various aspects of the corrosion of iron. The book is really a series of papers in which the knowledge regarding the corrosion of this material is summarized and brought up to date. The text is divided into five parts, the first of which constitutes a survey of the existing information on the corrosion of cast iron. The influence of various elements and conditions upon the corrosion is discussed in a critical manner and the results of practical experience are outlined.

Part II is devoted to a study of the protection of iron with paint against self-subaqueous corrosion. The method of conducting experimental work is described and the preparations of oil and pigment, functions of pigment, relative values of thin, thick and multiple coats of paint, effect of heat treatment and the influence of mill scale are discussed.

The next two parts of the text are devoted to the influence of strain upon the corrosion of iron and the influence of temperature upon the rate of corrosion of iron immersed in water. Part V is devoted to a presentation of the colloidal theory of corrosion. The action of alcohol, poisons and radium rays is outlined and in the conclusion the author states that the theory offers satisfactory explanation for many phenomena which cannot be explained by any of the older theories. Dr. Friend also maintains that the colloid theory suggests new lines of attacking the problem of the protection of iron and steel from oxidation. A brief appendix and a well arranged name and subject index complete the volume.

* * *

One Hundred Pages on Metallurgy

Metallurgy of Iron and Steel; 122 pages, 4 x 6¼ inches; cloth; published by Sir Isaac Pitman & Sons, Ltd., and for sale by THE IRON TRADE REVIEW, Cleveland, for 85c.

It is much more difficult for an author to cover a broad subject with a limited number of words than when no such restrictions are imposed. In spite of this handicap, the editor responsible for the selection of material in the *Metallurgy of Iron and Steel* has been successful in choosing essentials and arranging them in logical sequence, thereby creating a concise volume of important information. The text is divided into six chapters, most of the subject matter being taken from the numerous publications of Sir Robert Hadfield. According to the publishers, Sir Robert has generously permitted the use of practically all of his papers on metallurgy including many of his contributions to the Faraday society. Chapter I consists of a few photographs devoted to a discussion of the need of conserving iron and steel, this appeal being applied principally to Great Britain. Chapter II is devoted to a recital of the early work of pioneers in scientific metallurgy, Swedish, French and British scientists being mentioned prominently in this connection. The balance of the book is devoted to a brief description of the various operations in steelmaking, as seen from the viewpoint of the metallurgist. The importance of alloy steel is emphasized and the factors affecting fuel economy are discussed.

* * *

A Guide for Sheet Metal Work

New Tinsmith's Helper and Pattern Book, by Hall V. Williams; 458 pages, 4¼ x 6¾ inches; cloth; published by the U. P. C. Book Co. and for sale by THE IRON TRADE REVIEW, Cleveland, for $3.00.

This book, which is in its fifth edition, is designed as a working guide for apprentices, mechanics or students who desire information on the properties of circles, the mensuration of surfaces and solids, simple geometrical drawing, the forming of seams, laps and joints and the layout and cutting of conical vessels, elbows, piping, frames, fittings, gutters, roofing, cornice and skylight work. In addition to the explanatory portion of the text, numerous tables of weights, measures, etc. and a complete index are given.

One-Third of Norway's Mines Are Operating

Cable dispatches to the department of commerce from its agents abroad picture conditions in the iron and steel industry as follows:

Mines owned by the Norwegian Employers' associations in Norway have decreased their personnel to 1800, compared with 6100 in 1914. Only one-third of the country's ore mines are in operation. Export of pyrites dropped from 467,000 tons in 1913 to 190,000 in 1921. In the metal and machine industries only half the normal forces are being employed. German and Swedish producers are underbidding Norwegian ones.

Mexican iron and steel manufacturers reduced prices in June to meet foreign competition.

Australian producers claim the 44-hour work week with 48 hours' pay has crippled the iron and steel industry. Employes refuse to increase their hours or submit to wage reductions.

Training for Foremen

(Concluded from Page 172)

lump sums out of the profits of a concern, usually at Christmas, in the form of bonus. In the sense of our definitions it is not bonus but monetary gifts of appreciation.

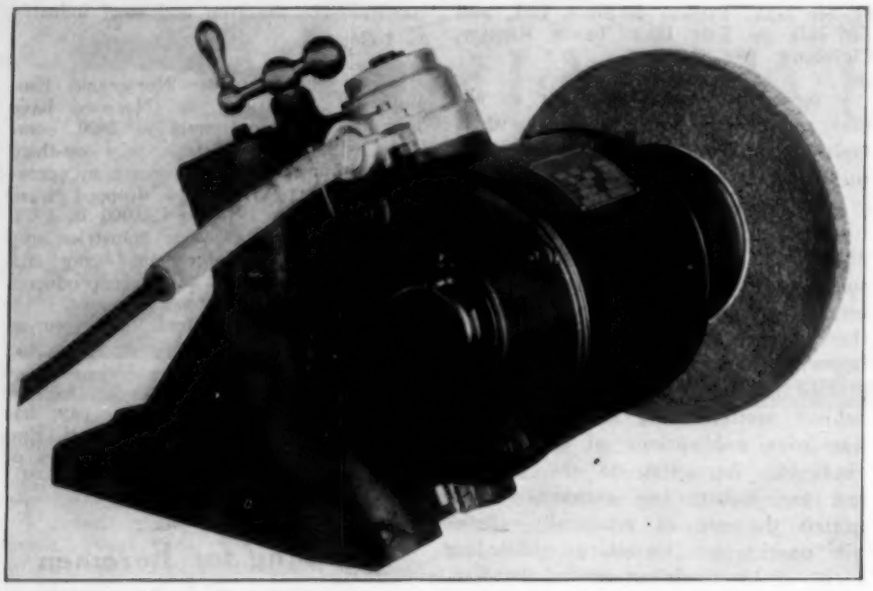
Profit sharing is not a new thing by any means. It has existed as a form of incentive since 1775 in Europe, and in this country since 1794, having been introduced by Albert Gallatin, in a glassworks in New Geneva, Pa., in that year.

The expressed purposes of profit sharing are: To increase loyalty, to encourage productivity, to reward efficiency. Profit sharing has not made particularly good as an incentive for the reasons that: It does not reward; it does not reward in proportion to individual productivity and it does not measure up to the amount expected in dollars and cents. The incentive is remote as it occurs at too far distant intervals. Men expect their remuneration weekly or bi-monthly, and a reward offered annually or semi-annually is not effective. The individuals who work hardest receive no more than do the drones and slackers under this system. The individual is not rewarded in proportion to his effort or result.

Workers usually have in mind a huge sum which they are to receive as their share of the profits, but when these profits are distributed over a great number of workers the individual share is not very large.

Profit sharing is not a basic pay system and has often been installed as a makeshift.

The privilege of investment is a most commendable incentive. Workers having the opportunity to invest in the company of which they are a part will take more interest in the welfare of that company.



ELECTRIC GRINDER MOUNTED ON AN ANGLE SUPPORT

Develops Angle Grinder

The many advantages of both horizontal and vertical adjustments have been combined without sacrificing any of the simplicity and rigidity of a single slide in the angle-plate grinder, shown in the accompanying illustration, which is built by the Van Dorn Electric Tool Co., 2978 Woodhill road, Cleveland. This machine was designed primarily to take the place of a tool post grinder used on engine lathes.

The motor is adapted for grinding service, and is furnished for direct or alternating current. The normal continuous capacity of the motor is 1 1/3-horsepower with a peak capacity of 2¼-horsepower. The motor operates at 1800 revolutions per minute. The motor shaft is 1 7/16 inches in diameter through the motor and 1 inch through the grinding wheel.

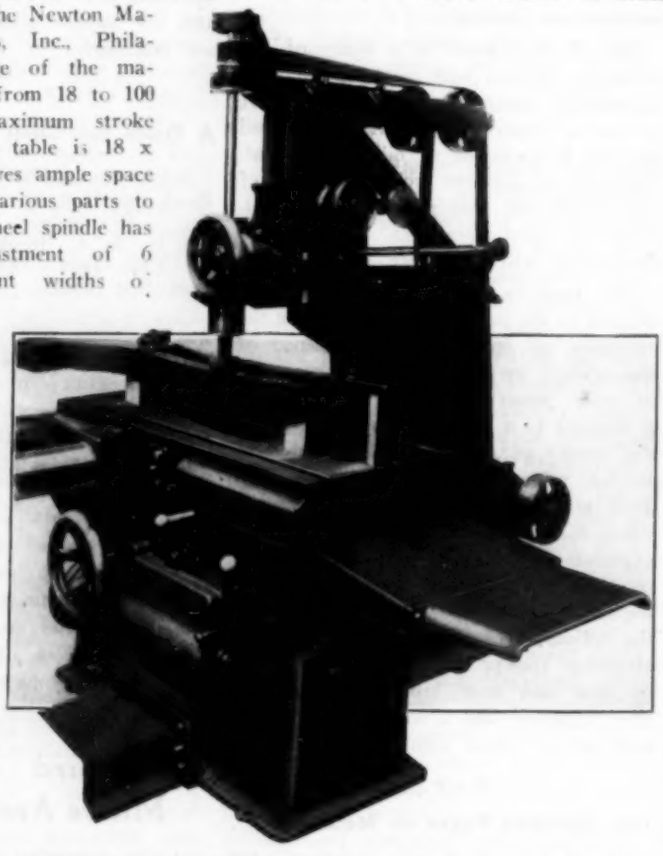
In a recent test of this grinder, a roll, 7 inches in diameter, was ground in an engine lathe; the roll was driven at a peripheral speed of 60 feet per minute, while the traverse feed equalled ⅛-inch per revolution of the work. In this test a grinding cut of 0.002-inch depth was maintained continuously

The Van Dorn company also has completed arrangements for the manufacture of motors of its own design for its 1, 2, 4 and 6-horsepower bench and floor grinders, buffers and other units. These motors incorporate a number of improvements, being designed especially for continuous operation. The motors are of the self-enclosed, ventilated type and their temperature will not rise above 50 degrees Cent., in 30 minutes of operation at their rated loads. They are ventilated by a large centrifugal fan which forces the air through protected openings at the rear of the motor. The diameter of the motor housing is smaller than that of the grinding wheel, which facilitates the handling of work.

New Grinder Is Adapted to Radius Work

A radius grinding machine particularly adapted for grinding locomotive links and blocks and similar work has recently been developed by the Newton Machine Tool Works, Inc., Philadelphia. The range of the machine is for radii from 18 to 100 inches, with a maximum stroke of 30 inches. The table is 18 x 42 inches, which gives ample space for clamping the various parts to be ground. The wheel spindle has a horizontal adjustment of 6 inches for different widths of work and is counterweighted and provided with hand adjustment. The machine is equipped with a wheel truing device mounted so that the motion of the spindle slide is available for truing the wheel.

The machine is driven by a 5-horsepower motor operating at 1200 revolutions per minute. The spindle speed is 6000 revolutions per minute, while the table has three speeds, ranging from 5 feet 3 inches to 10 feet 6 inches per minute.



A VERTICAL GRINDER DESIGNED FOR FINISHING LINKS AND BLOCKS FOR LOCOMOTIVES AND SIMILAR WORK

Plate Rolling Improved

(Concluded from Page 181)

three systems of rolling are contrasted in Figs. 1 to 3 and Table II. A comparison of the diagrams Figs. 1-3 shows that practically the only difference between the methods of producing black plate on a single mill either by the three or four-part system and on a double mill by the three-part system is that the steel never is heated twice in the same furnace. In other words, the double mill, three-part system, is an attempt to make the steel follow a continuous onward path thus eliminating the backtracking involved in the single mill, three and four-part systems, and shortening the time required to reduce a heat composed of 20 pairs of bars to the desired specification. The principle advantage afforded by the double mill, three-part system, is that production is larger than it otherwise would be if the two mills were operated singly on the three or four-part systems and, consequently, the cost of production is minimized.

Canada in 1921 had 463,848 registered motor vehicles; 415,263 in 1920.

Lower Southern Iron Rate to Chicago Deferred

Chicago, July 18.—Hope of southern furnace interests for lower freight rates on pig iron to Chicago from Birmingham has been blasted for the time being at least. Agitation toward this end has been under way for several months. Early in June a meeting was called by the Central Freight association in Chicago to bring together all interested parties, but no decision was reached at that time. A second meeting held July 13 put a definite end to negotiations for lower rates to Chicago. The southern roads were anxious for these lower rates and most of the other interests were amenable to the general plan of the conference. However, opposition by northern roads was of such a nature that the Central Freight association deemed it advisable to drop the proceedings as far as Chicago was concerned.

It was definitely decided, however, to reduce rates to four strategic points, namely Evansville, Ind., Cincinnati, Louisville, Ky., and St. Louis. The roads interested agreed to issue new tariffs at the earliest possible moment, which are to become effective immediately. The exact amount of the reduction has not been announced here.

The effect of the new rates will be strongest in the St. Louis district, which already has had close competition between southern and northern interests. The rate from Birmingham to St. Louis at present is $5.17 against $6.01 to Chicago. The rate from Chicago furnaces to St. Louis is $2.40 and at the recent level of pig iron prices this brings the delivered levels to $26.40 for iron originating in the Chicago district and $24.17 for Birmingham iron. Any reduction in the southern rate to St. Louis, therefore, will not affect the present competitive status of the furnaces, but will react to the advantage of St. Louis consumers. Close observers of the pig iron situation feel that the reduced rates from Birmingham to the four cities named above will not appreciably alter the movement of pig iron out of Chicago. It is pointed out that the bulk of the iron consumed in the St. Louis district is basic iron, which, except for occasional lots made by the Woodward Iron Co., is not supplied by southern furnaces.

Reductions Are Given

Birmingham, Ala., July 17.—Further reduction by southern roads of freight rates on pig iron to St. Louis and Ohio river junctions of approximately 38 to 85 cents a ton, places the rates from Birmingham to Cincinnati at $3.53, to Louisville $3.34 and to St. Louis $4.32. The rates effective July 1 under the general 10 per cent freight reduction were to Cincinnati $4.05, to Louisville $3.72 and to St. Louis $5.17.

Begin Work on Puddling Plant in Valley

Constructon of the new mechanical puddling plant of the Youngstown Steel Co., was begun recently on the company's 415-acre site about two miles north of Warren, O. Four mechanical puddling machines designed by E. L. Ford, director and member of the executive board of the Brier Hill Steel Co., and a two-stand, 3-high tandem mill, which will be built by the United Engineering & Foundry Co., Pittsburgh, will make up the present installation.

The puddling machines will have a combined daily output of 250 tons. A Ford-type puddling machine has been in successful operation for many years at the plant of the Brier Hill Steel Co., where the mechanical defects were ironed out in the making of experimental heats. This particular machine will be included in the new installation. Present plans include purchasing the pig iron but when conditions warrant the officials expect to lay down two blast furnaces, coke ovens and 12 additional mechanical puddling machines.

The pig metal will be remelted in a cupola, contracts for which now are pending, and then stored in a molten state in a mixer. The metal will be withdrawn as needed and worked in 2000-pound heats in each machine. Each ball of puddled iron then will be formed into an ingot under a hydraulic press and after being reheated will be rolled into billets or muck bars. For the present the company will market its product in the semifinished state. Contracts for the electrical equipment and the buildings are expected to be let this month. A new name for the company will be chosen in the immediate future. Officials of the Youngstown Steel Co., include T. M. Phillips, general manager; H. Z. Bixler, chief engineer; and J. P. Suter, secretary-treasurer.

Builds Tin Plate Works

Washington, July 18.—Commercial Attache Abbott at Tokyo has reported to the department of commerce that the Imperial Steel Works, at Yawata, Japan, has completed its tin plate addition, which is designed to check tin plate imports from the United States. The capacity is estimated at 20,000 tons annually.

News of Societies

Past and Coming Meetings of National and Local Trade and Technical Organizations

STEPS have been taken to organize a western Massachusetts section of the American Society of Mechanical Engineers with headquarters in Springfield, Mass. Charles L. Newcomb, works manager, Worthington Pump & Machinery Corp., Holyoke, Mass., and manager of the national society from 1918 to 1921, is chairman of the committee for arrangements. Affiliation with the Engineering Society of Western Massachusetts is contemplated. A regional conference of the New England sections of the American Society of Mechanical Engineers will be held in Springfield, Oct. 9-11.

* * *

Connecticut Foundrymen Organize

The Connecticut Foundrymen's association has organized under the laws of that state to improve and standardize general foundry practice, better working conditions and to encourage among its members a spirit of friendliness and progress. The organizers are F. W. Stickle, C. S. Neumann and J. M. Woolson, Hartford, Conn.

Convention Calendar

Aug. 28-30—Lake Superior Mining institute, twenty-second annual meeting at Houghton, Mich. A. J. Yungbluth, Ispheming, Mich., is secretary.

Sept. 5-9—American Chemical society, fall meeting at Pittsburgh. Charles L. Parsons, Box 1505, Washington, is secretary.

Sept. 11-15—Association of Iron and Steel Electrical Engineers, 1922 convention at the new auditorium, Cleveland. John F. Kelly, Empire building, Pittsburgh, is secretary.

Sept. 21-23—American Electrochemical society, fall meeting at the Windsor hotel, Montreal, Canada. Dr. Colin G. Fink, Columbia university, New York, is secretary.

Oct. 2-7—American Society for Steel Treating, exposition and convention at the General Motors Co. building, Detroit. W. H. Eisenman, 4600 Prospect avenue, Cleveland, is secretary.

Lackawanna Report Shows Industry Improves

Improved conditions in the steel industry are reflected in the report of the Lackawanna Steel Co. covering the three months of the second quarter this year. The company reports a deficit of only $172,972 for the period as compared with a loss of $479,792 in the first quarter. Last year the second quarter deficit was $983,127 and the fourth quarter $1,465,222.

Just how the business of the company in the second quarter this year compares with that of the same quarter in 1921 may be seen in the following study of the income account:

	1922	1921
Net after taxes	$457,303	*$384,762
Interest, etc.	264,238	258,891
Depreciation, etc.	365,945	339,474
Deficit	172,880	983,127

*Loss.

For the first half years of 1922 and of 1921, the Lackawanna income acount compares as follows:

	1922	1921
Net earnings	$659,713	$282,933
Interest, etc.	528,742	518,929
Depreciation, etc.	783,823	738,396
Deficit	652,852	974,392

Act on Carpenter Steel Co. Consolidation

New York, July 18.—Stockholders of the Penn Seaboard Steel Corp., Philadelphia, met today to vote on the absorption of the Carpenter Steel Co., to ratify a $5,000,000 issue of first mortgage 7 per cent 20-year gold bonds and 250,000 shares of Class A common stock with which to purchase the Carpenter Co. and to authorize the change of the company's name from the Penn Seaboard Steel Corp. to the Carpenter Steel Corp. following the purchase. The meeting was originally set for July 7 but was postponed.

Negotiate for Tube Works

Sale is expected shortly of the Globe Seamless Steel Tubes Co., manufacturers of steel tubes for locomotive and stationary boilers and of automobile parts, with works at Milwaukee and sales offices in Chicago, Detroit, New York, Atlanta, Houston, San Francisco and Portland, Oreg. This company has been owned principally by William Renshaw of Chicago president, and Lawrence Fitch of Milwaukee, vice president and secretary, both of whom will retire. The new interests will be headed by Robert P. Lamont, president of the American Steel Foundries, Chicago; Paul J. Kalman, president of the Paul J. Kalman Co., Bliss & Laughlin, Inc. and the Hudson Motor Co. of Illinois; and by Frank J. O'Brien, vice president and general manager of the Globe company who will continue in active charge of the business.

The Globe plant was built in 1910 and has an annual capacity of 36,000 tons of steel tubing.

Denies Merger Reports

Reports of negotiations for the merger of the United Alloy Steel Corp., Canton, O. and of the Central Steel Co., Massillon, O., have been denied by George H. Charls, vice president and general manager of the United Alloy corporation. Reports that the merger might include a Youngstown, O., company, also were denied.

Declares Stock Dividend

The Standard Steel Works Co., all of whose stock is owned by the Baldwin Locomotive Works has declared a stock dividend of 100 per cent, increasing its capital stock from $3,000,000 to $6,000,000. At the end of 1921, the surplus of the Standard Steel Works Co. was $5,644,568. This will be reduced to $2,644,565 by the stock dividend, while the capital account will be increased in like proportion. The plant and equipment at the end of 1921 was valued at $9,458,571, while the capital stock was $3,000,000 and the bonds outstanding $2,200,000. It is understood that the increase in capital has been effected to make it more fully represent the value of the property.

Foundry Code Approved

The national safety code for the protection of workers in foundries has been approved by the American Engineering Standards committee. This code is a revision of that developed by the American Foundrymen's association and the National Founders association. The approved code omits such subjects as building construction, exits, lighting and sanitation as they are covered by other codes. The new code consists of 124 sections, grouped under 12 main divisions: Entrances, floors, pits and galleries, gangways, aisles, foundry equipment, furnishing and cleaning, heating, ventilating, operating rules, protection devices and employment of females and recommendations.

According to F. W. Dodge Co., Boston, building operations in New England for the week ending July 3 were $7,583,700, as compared to $6,262,800 for the corresponding period in 1921.

New Motor Plant

To Be Built by Ford Co. of Canada—Steel Mills To Expand

Toronto, Ont., July 17.—Wallace R. Campbell, vice president and treasurer of the Ford Motor Co. of Canada, Ltd., announces that his company will begin in the near future the erection of a large motor plant immediately adjoining the present plant at Ford City, near Windsor. The new plant will cover approximately 125 acres and will cost about $6,000,000. The land has been purchased at a cost of approximately $1,000,000. It extends 2000 feet along the river front.

It is expected that the output of the Canadian Ford company will be doubled, immediately the new plant is in operation, the plan being to make 500 cars a day instead of 250 as at present. This, however, will not represent the entire output, as the equipment will allow a production of 1000 cars per day as soon as the market warrants. The present plant will gradually cease to operate as a motor car factory, following the completion of the new one, and will eventually be devoted to the manufacture of car bodies. It also has been announced that the Ford Motor Co. of Canada is making arrangements to establish a plant at Weston, Ont., at an estimated cost of $1,000,000.

Some reports of factory expansions in the Windsor district appear to be exaggerated and have inflated the price of real estate. Ward B. Perley, general manager of the Canadian Steel Corp. says: "So far as connecting the name of our corporation with this so-called boom there is not the slightest truth in the story. Tales of huge expansion, uncertain of realization at our Ojibway plant now building, will be sure to disappoint many. We have made no change in our program which was announced six years ago and to which we are steadily adhering. The growth of Ojibway will be very gradual."

It is understood that Roy M. Wolvin, president of the British Empire Steel Corp., is now working on important plans for extensions to the Sydney steel works. These are stated to include the installation of several blast furnaces and new equipment, including electric machinery and cranes, involving an expenditure approximating $15,000,000.

The Cuba Railroad Co., Cuba has declared two semiannual dividends of $3 a share on its preferred stock. The last payment was on Aug. 1, 1920.

Sheet Workers' Wages Raised 3 Per Cent

Wages of sheet workers in the mills having an agreement with the Amalgamated Association of Iron, Steel and Tin Workers will be 3 per cent higher in July and August than in May and June. The average selling price of plain sheets, gages 26, 27 and 28, during May and June was 2.90c per pound, compared with 2.80c in the preceding period. Following are the average selling prices on which the wages for the respective periods were based:

July-August	2.90c	+ 3 per cent
May-June	2.80	unchanged
March-April	2.80	unchanged
January-February, 1922	2.80	+ 1½ per cent
November-December	2.75	—10½ per cent
September-October	3.10	—15 per cent
July-August	3.85	— 3 per cent
May-June	3.95	—10½ per cent
March-April	4.30	—25½ per cent
January-February, 1921	5.15	—19½ per cent
November-December	5.80	+ 3 per cent
September-October	5.70	— 1½ per cent
July-August	5.75	—21 per cent
May-June	5.05	+12 per cent
March-April	4.65	+ 9 per cent
January-February, 1920	4.35	unchanged
November-December	4.35	unchanged
September-October	4.35	unchanged
July-August	4.35	

No change will be made in wages of tin mill workers in July and August, the average selling price per base box having remained at $4.65 during May and June. Comparisons follow:

July-August	$4.65	unchanged
May-June	4.65	— 2 per cent
March-April	4.75	— 1 per cent
January-February, 1922	4.80	— 4 per cent
November-December	5.00	unchanged
September-October	5.00	—19 per cent
July-August	5.05	—11 per cent
May-June	6.50	—14⅛ per cent
March-April	7.15	—13½ per cent
January-February, 1921	7.75	unchanged
November-December	7.75	+ 7⅛ per cent
September-October	7.40	unchanged
July-August	7.40	unchanged
May-June	7.40	+ 9 per cent
March-April	7.00	+ 2¼ per cent
January-February, 1920	6.90	unchanged
November-December	6.90	unchanged
September-October	6.90	unchanged
July-August	6.90	

Industrial Conference in Colorado Announced

E. H. Weitzel, general manager of the Colorado Fuel & Iron Co., and Clarence H. Howard, president, Commonwealth Steel Co., St. Louis, are among the speakers announced for the second annual industrial conference, July 28-30 at the Y. M. C. A. conference grounds, Estes park, Colorado. Mr. Weitzel's topic will be "Progress in Recent Years on Human Relations in Industry," and Mr. Howard will speak on "Fellowship in Industry." A number of other speakers occupying important positions in industrial institutions will be heard. It is expected this conference will greatly exceed in attendance that of last year, when 150 representatives of 19 different types of industry and vocational pursuits were present.

The weekend conference on human relations in industry, as it is called, is announced in the same connection and with the prospectus of the training school for superintendents, foremen, supervisors, employment managers, welfare directors and others in responsible relation to industrial workers. The dates for this course are July 24-28. A feature is the session on industrial history and economics, led by E. S. Cowdrick, who is well known as a writer and lecturer, and who has had extensive experience with labor relations through his connection with the Colorado Fuel & Iron Co.

Again Delays Hearing on Basing Point

Washington, July 18.—Testimony in the Pittsburgh basing point complaint which counsel for the federal trade commission originally planned to take in the last half of July, closing the commission's side of the case, will not be taken until the latter part of August. Neither the date nor the place have been decided but the commission will endeavor to permit the United States Steel Corp., the defendant in the proceedings, to begin its defense by the middle of September. At this time chances favor Pittsburgh as the scene of the commission's final testimony.

Counsel for the trade commission in the case are averse to assessing the testimony taken up to this time, but believe the commission's case has been well sustained. Although it is not pertinent to the case, the record contains many references by witnesses to the fact that while they are opposed to Pittsburgh base from their own business standpoint they do not wish to be understood to be opposing the Steel corporation itself. The record already contains 10,360 typewritten pages and, if the corporation's defense is as voluminous as the prosecution, will finally assume the proportions of 25,000 pages.

According to Chairman Gaskill of the commission, the basing point practice will not enter into the commissions, consideration of the Bethlehem-Lackawanna and Midvale-Republic-Inland mergers. The commission cannot assume that the practice is illegal and that the proposed mergers would help perpetuate something now on trial as alleged by the Western Association of Rolled Steel Consumers in a communication to Attorney General Daugherty.

Strike Effects

Felt in Coal Tar By-Products—Prices, However, Remain Unchanged

New York, July 18.—Production of coal tar by-products is commencing to feel the effects of the coal and rail strikes. While fuel supplies are in fair volume at most of the plants, a shortage is developing at others and further, it is said, the coal now available in some cases is not of sufficiently high quality to produce by-products at the normal rate. This situation, in conjunction with the continued good demand, is making for scarcity in some products, the scarcity of benzol being particularly pronounced.

Coke Oven By-Products

Spot	
Per Gallon at Producers' Plants in Tank Lots	
Pure benzol	$0.30 to $0.33
Toluol	.30 to .33
Solvent naphtha	.27 to .29
Commercial xylol	.29 to .32
Per Pound at Producers' Plants	
Phenol	$0.15
Naphthalene, flake	.07 to .08
Naphthalene, balls	.08 to .09
Per 100 Pounds at Producers' Plants	
Sulphate of ammonia	$2.80 to $2.85
Contract	
Pure benzol	$0.30 to $0.33
Toluol	.30 to .33
Solvent naphtha	.27 to .29
Commercial xylol	.29 to .32
Per Pound at Producers' Plants	
Phenol	nominal
Naphthalene, flake	$0.07 to $0.08
Naphthalene, balls	.08 to .09
Per 100 Pounds at Producers' Plants	
Sulphate of ammonia (12 months)	$2.80 to $2.85

Prices, however, continue unchanged as follows: Pure benzol, 30 to 33 cents, f.o.b. works in tanks, and 35 to 38 cents in drums;; 90 per cent benzol, 27 to 29 cents in tanks, and 32 to 34 cents in drums; toluol 30 cents in tanks, and 35 to 38 cents in drums; solvent naphtha, 27 to 29 cents in tanks and 33 to 34 cents in drums; and commercial xylol, 29 to 32 cents in tanks, and 34 to 37 cents in drums.

Sulphate of ammonia is steady at $2.80 to $2.85, f.o.b. works, and $3.30 to $3.35, port, the latter range being quoted on export business. Contractural demand by domestic consumers continues to be the outstanding feature in current demand.

Naphthalene is holding at 7 to 8 cents, f.o.b. works in flakes and 8 to 9 cents in balls. Quotations on phenol also are unchanged, and in both instances buying is of a routine character.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

BERTRAM D. QUARRIE, general superintendent of blast furnaces and steelworks of the American Steel & Wire Co. at Cleveland, has resigned to become general manager of the Otis Steel Co., Cleveland, a new position just created by that company. The change is to become effective around Aug. 1. Mr. Quarrie, general superintendent since 1910, has been with the American Steel & Wire Co. more than 15 years and is one of the prominent younger operating executives of the iron and steel industry. He was graduated from Case School of Applied Science, Cleveland, in 1903, completing the chemical course. He secured a position in a drafting room and then became associated with the Grasselli Chemical Co. as chemist at its Cleveland plant. Deciding to specialize in iron and steel, he resigned from the Grasselli company to take a position as chemist at the iron ore mines of a large company in the Mesabi region. He then became chief chemist at a blast furnace plant in Milwaukee.

Later Mr. Quarrie joined the Cleveland Furnace Co. as chief chemist. Shortly after becoming affiliated with the Cleveland Furnace Co. he was appointed blast furnace superintendent. Then he became assistant superintendent of blast furnaces at the Central furnaces of the American Steel & Wire Co., Cleveland. Later the Inland Steel Co., Indiana Harbor, Ind., was in need of a blast furnace superintendent and tendered the position to Mr. Quarrie. He accepted but six months later returned to Central furnaces as superintendent. This about 1907. In 1909 he served on the blast furnace committee of the United States Steel Corp. About 1910 Henry A. Barren, then superintendent of the Newburg Steel works of the American Steel & Wire Co. was appointed general superintendent of all plants of the American Steel & Wire Co. in Pittsburgh, Donora and Cleveland districts. Mr. Quarrie was then transferred to the Newburg Steel works to fill the vacancy caused by Mr. Barren's promotion. During 1918 Mr. Quarrie was president of the school board of Cleveland. He is a trustee of the Case School of Applied Science.

W. O. Peale, field representative of the Westinghouse Electric & Mfg. Co., has been placed in charge of a new suboffice opened at 503 Virginia Railway & Power Co. building, Richmond, Va.

John W. Odlin has resigned as advertising manager of the Wickwire Spencer Steel Corp., Worcester, Mass.,

BERTRAM D. QUARRIE

effective Sept. 1, to start an advertising agency in that city.

Bayard F. Snow, until recently of Pittsburgh, will sail from New York, July 15, for Seccondee, Gold Coast, West Africa, to become chief engineer of the African Union Co., Inc.

Sir Robert A. Hadfield, Bart., president of Hadfields, Ltd., has been elected president of the Engineer's club of London, taking office Sept. 1 in succession to E. Manville, M. P., whose term expires.

H. L. Warner, New York manager for Frank Samuel, 39 Courtlandt street, dealer in steel, iron, iron ores and ferroalloys, has again assumed his duties after an absence of three months, due to illness.

F. G. Peterson, for five years manager of the foundries of the Bucyrus Co., South Milwaukee, Wis., has been made manager of the Hercules Steel Castings Co., Milwaukee. Frank E. McIntyre, formerly manager of the Hercules company, is with the National Steel Foundries division of the National Brake & Electric Co., Milwaukee.

Walter W. Leck, general superintendent of the American Tube & Stamping Co., Bridgeport, Conn., and formerly superintendent of rolling mills at the Steelton, Pa., plant of the Bethlehem Steel Corp., resigned June 1 to become general superintendent of the Scullin Steel Co., St. Louis.

C. J. Mesta, second vice president of the Mesta Machine Co., Pittsburgh, in charge of the company's Chicago offices, has returned to headquarters to take charge of the sales department. Albrecht B. Neumann, mechanical engineer who has been prominent as chief engineer and consulting engineer with large steel companies in the Middle West, has been made manager of the Chicago office which now is in the Peoples Gas building.

Arthur L. Rice, editor of *Power Plant Engineering* has been elected vice president of the American Society of Mechanical Engineers to fill the unexpired term of the late L. E. Strothman. Mr. Rice, who is the author of several technical books, was born in Barre, Mass., in 1870. He was graduated from the Worcester Polytechnic institute in 1891 with degree of B. S. in mechanical engineering. Two years later he took the degree of B. S. in electrical engineering and in 1896 completed work at Cornell university with degree of M. M. E. Then for seven years Mr. Rice had charge of the course in applied electricity at Pratt institute and for the next year was assistant to the secretary of the American Society of Mechanical Engineers. Next he took up editorial work, becoming editor of *The Engineer* in 1908, following that with the editorship of *Power Plant Engineering*. He has been active in the society, having been secretary of the Chicago section and now is a member of the committee on constitution and bylaws. He is a member of the Western Society of Engineers and formerly was chairman of its mechanical section. Membership in the American Engineering council also is maintained by Mr Rice.

Obituaries

WILLIAM M. HOLLAND died suddenly, June 14, at his home at South Bend, Ind., at the age of 56 years. Mr. Holland was actively engaged in various business interests until his death. He was president of the Motor Castings Co., vice president of the South Bend Bait Co., president of the Elkhart Iron Works, president of the Clover Leaf Mfg. Co., director of the American Earth Works, the Sibley Machine Co., which was his most active interest and the Citizens National bank of which he was president. Born in Florence, Neb., in 1886, Mr. Holland moved to South Bend at the age of five years with his parents. He started to work for the Sibley & Ware Mfg. Co., when he was 14 years old. He rose rapidly in the business and some years later became president of the company.

Ferdinand Dieckman, president of the Ferdinand Dieckman Co., 2423 Harrison avenue, Cincinnati, manufacturer of conductor pipe, died July 10.

Burton Clifton Bangs, 70 years old, vice president and purchasing agent of the Leavitt Machine Co., Orange, Mass., died at his home in that town July 13, following a 10-weeks' illness. He had been connected with the company almost from its beginning.

Alfred Dawes, inventor of rivet making machinery, died at his home in Winchester, Mass., July 12, aged 86 years. He was associated with the Tubular Rivet & Stud Co., Boston, for nearly half a century, retiring 11 years ago at the age of 75 years.

William T. Murphy, president and manager of the Standard Machinery Co., Auburn, R. I., died in a hotel in Greenfield, Mass., July 9, aged 40 years. He was president of the Metal Trades council, Providence. Mr. Murphy was a graduate of Brown university, class of 1903, and had been connected with the company since that year, serving as manager until a few years ago when he succeeded the late Michael J. Houlihan as president.

William Mosley, manager and one of the directors of the Canadian Tube & Steel Products Co., died recently at Westmount, Montreal, Can., aged 54 years. He was a native of England and went to Montreal in 1898 as superintendent of the Page Hersey Tube & Iron Works. Later he went to Cohoes, N. Y., in a position with the same company, but returned to Montreal in 1907 as superintendent of the Montreal Rolling Mills. Three years later he was engaged in the formation of the Canadian Tube & Iron Co. which afterwards merged with other companies as the Canadian Tube & Steel Products Co.

Charles E. Thwing, 61 years old, sales manager of the Worcester Lathe Co., Worcester Mass., died at his home in that city, July 9, after five months' illness. His life had been devoted to the industry, which made him one of the best known lathe salesman in the country. He began his career as a bookkeeper for the Lathe & Morse Tool Co., Worcester, of which his father, Edwin A. Thwing was for many years agent until his death. Mr. Thwing had been at one time sales manager for the Whitcomb-Blaisdell Machine Tool Co., Worcester, which he left to become treasurer of the Draper Machine Tool Co., Worcester. This company later was taken over by the Whitcomb-Blaisdell Machine Tool Co. and Mr. Thwing went with it. When Alonzo W. Whitcomb, president, left the company some years ago and started the Worcester Lathe Co., Mr. Thwing joined him in his old capacity.

David D. Faris, manager of the marine department of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., since July 1, died suddenly in his office shortly after noon July 10. Death was due to apoplexy. Mr. Faris was born in Wheeling, W. Va. After graduating from school he went to work almost immediately for the Bellaire Steel Works, Bellaire, O. At the outbreak of the Spanish-American War he joined the army and went to the Philippines. Upon his discharge in 1899, at the end of the war, he took up a commercial course in Wheeling and then went to Pittsburgh to work in the purchasing department of the National Tube Co. In 1901 he entered the employ of the National Cash Register Co., Dayton, O. and a few months later became connected with the engineering department of the Pressed Steel Car Co., McKees Rocks, Pa. In May, 1904, he was employed in the production department of the Westinghouse Machine Co. at East Pittsburgh and then was transferred to the sales department where he remained for five years. He was assigned to the Atlanta office as sales engineer, and later was engaged in the Chicago office. In 1912 he was given charge of the Detroit and Indianapolis offices of the Westinghouse company. When the Westinghouse Machine Co. was absorbed by the Electric company in 1915, Mr. Faris returned to East Pittsburgh and was made assistant to the manager of the power department. In 1919 he became assistant to the manager of the marine department, in which position he remained until his recent promotion. Mr. Faris was a member of various technical organizations.

Suspends Lower Southern Rates on Steel

Washington, July 18.—The interstate commerce commission has suspended until Nov. 12 the tariffs filed by F. A. Leland, tariff agent, reducing the railroad freight rates on iron and steel articles from the lower Mississippi river crossing points of New Orleans, Baton Rouge and Anchorage, La., to Houston, Galveston, Beaumont and other points in Texas. The proposed reductions, which Pittsburgh producers were understood to favor and Chicago and St. Louis interests to oppose, will be the subject of a hearing later. The present rate per 100 pounds on bars, angles and fence material from the Louisiana points to the Texas points is 57½ cents and on pipes and fittings 33 cents. The proposed proportional rate in each instance was 20 cents. The local rate on bars, angles and fence material was to be cut to 38 cents and on pipes and fittings to 33 cents.

Tentative decisions by examiners for the interstate commerce commission favor the Baltimore & Ohio railroad in actions brought by the Brier Hill Steel Co., and the Republic Iron & Steel Co. The Brier Hill company protested the rate of 84 cents per gross ton on limestone from Shaw Junction, Hillsville and Walford, Pa., to Youngstown, and the Republic company the rate of $1.50 per net ton on bituminous coal from Russelton, Pa., to Youngstown. The examiners recommend that the commission find these rates not unreasonable.

The Thomas Iron Co., has withdrawn its complaint against the Lehigh & Hudson railroad involving freight rates on limestone from New Jersey points to its furnaces at Hellertown and Hokendauqua.

Export Trade Plans Broadened

Appropriation for Bureau of Foreign and Domestic Commerce Increased 30 Per Cent —Special Effort Made To Protect American Business Interests in Europe —New Offices To Be Opened in Other Countries

WASHINGTON, July 18.—Marked expansion of the foreign trade activities of the department of commerce has been made possible through the increase of 30 per cent in the appropriation of the bureau of foreign and domestic commerce for the year ending June 30, 1923. The largest single increase in funds granted by congress is for the commodity divisions set up in the bureau within the past year by Secretary Hoover. For these divisions congress has authorized the expenditure of $450,000 this year, compared with $250,000 last year. The growth of the bureau is evidenced by the following comparison of appropriation:

	Year ended— June 30, 1923	June 30, 1922	June 30, 1921
Salaries	$ 232,510	$ 232,510	$220,510
Commercial attaches	200,000	171,000	171,000
Promoting commerce	379,100	325,000	325,000
Promoting commerce in South and Central America	170,650	100,000	100,000
Promoting commerce in Far East	166,150	150,000	100,000
Export industries	450,000	250,000	.....
Total	$1,598,410	$1,228,510	$916,510

Commenting upon plans for expansion, Dr. Julius Klein, director of the bureau, states:

"Europe now is by far our most important export customer and for that reason special care is being taken to guard our commercial interests in that area this year. A number of high-grade specialists in American export commodities together with the necessary increases in clerical assistance will be assigned to the major offices now maintained by the department of commerce at London, Paris, Berlin, Rome, Madrid and elsewhere in Europe.

"The department will open a new office at Athens for the purpose of studying more carefully the opportunities for American trade in the Mediterranean area. Trade commissioners are being kept at advantageous points in Europe and Asia to study commercial developments in Russia and will enter Russia when conditions permit. A permanent office will be established in Havana and a new post created in Colombia. The force of the bureau in Latin-America also will be strengthened by the sending of additional trade commissioners and clerks to Mexico City, Rio de Janeiro and Buenos Aires.

"In the Far East new offices will be opened at Calcutta and Hongkong. From Honkong Siam, French Indo China, the Malay states, the Dutch East Indies and southern China will be covered. The office at Shanghai will be placed in charge of a trade commissioner, who is being selected especially to make a financial investigation of that section of China. The Melbourne office will be strengthened by an assistant trade commissioner."

Beyond the establishment of a mineral section to promote foreign trade in all minerals except oil, coal, and components of iron and steel, in charge of James A. Stader, of Joplin, Mo., the iron and steel division of the bureau plans no expansion this year, according to Luther Becker, its chief. The iron and steel division will concentrate on carrying out the pledges given to Secretary Hoover on its establishment. The fuel division of the bureau is being divided into an oil and a coal section. The divisions of commercial law and foreign tariffs are to be greatly strengthened this year.

The importance attached by congress to the furtherance of foreign trade, as evidenced by the 30 per cent increase in the appropriation, is further emphasized by a comparison of appropriations by congress for various branches of the government for this fiscal year and last year:

	Year ended— June 30, 1923	June 30, 1922
Legislative branch (congress)	$12,789,124.95	$18,248,047.06
Executive and independent offices	542,655,771.45	504,370,057.00
State dept.	10,549,488.16	16,847,346.09
Treasury dept.	1,494,232,219.44	1,539,961,379.65
War dept.	332,950,792.67	403,842,449.01
Navy dept.	297,770,249.00	426,378,656.87
Interior dept.	325,128,008.67	345,132,805.13
Department of agriculture	59,179,173.00	131,277,434.00
Department of commerce	18,746,245.00	17,397,859.00
Department of labor	6,916,920.00	5,798,196.50
Department of justice	17,851,221.00	17,114,167.67
Postoffice dept.	565,064,786.50	579,976,851.00

Thus it may be seen that of the ten departments, only justice, labor and commerce wrested from congress increases for this year. The increase for the department of labor is more than accounted for by the inauguration of welfare and maternity work, while the slight increase for the department of justice has been made necessary by the prosecution of war frauds. The only substantial increase in activity this year will be by the department of commerce.

Take Bids on Shell Steel

Washington, July 18.—Bids were opened today at the Philadelphia district ordnance salvage board, Frankford arsenal, Philadelphia, upon approximately 1350 gross tons of steel and 87,884 pounds of copper contained in high explosive shells and ammunition components stored at the Penniman ordnance reserve depot. Penniman, Va.

World's Steel Exports in 1922 Compared

Washington, July 18.—The United Kingdom led in world exports of iron and steel in the first quarter of 1922 with a total gross tonnage of 716,450, the iron and steel division of the bureau of foreign and domestic commerce states. Second was France with 584,620 tons, and then came Germany with 509,930, the United States with 508,070 and Belgium with 235,230. Commenting upon the first quarter, the iron and steel division states:

"Of the French total of exports of iron and steel the major part comprised pig iron and semifinished steel, 323,350 tons of the former and 175,320 tons of the latter. Germany and the United States exported iron and steel in nearly equal volume, with the United States leading in finished products. Heavy shipments of pig iron and ferroalloys on the part of the British, Belgians and Germans added considerably to their volume of exports in the first quarter of 1922, whereas the United States exported but a small tonnage. On rolled and finished iron and steel products for export the ranking stood as follows: United Kingdom, United States, Germany, France and Belgium."

Shortage of Coal Afflicts German Industry

Washington, July 18.—Department of commerce advices from Germany state that the German iron and steel works are keenly embarrassed by a shortage of coal, and several blast furnaces have been blown out. Rail production is reported decreasing, but heavy building activity makes brisk the demand for structural steel.

The improvement in the French iron and steel industry is temporarily checked, according to a cable to the department: The German demand for semifinished products has slackened somewhat, but other countries are doing some buying. The demand for pig iron is said to be limited to foundry needs.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

RECENTLY the Collins Co., Collinsville, Conn., edge tools, held its annual meeting in Hartford and Charles E. Chase and Anson T. McCook, both of Hartford, were elected directors to fill the vacancies caused by the resignations of Richard C. Colt, New York, formerly head of Collins & Co., and William Hill, former president, now of Portland, Me. The following officers were elected: President, Charles L. Taylor, Hartford; vice president, Charles Hopkins Clark; secretary, F. Spencer Goodwin; treasurer, Meigs H. Whaples; executive committee, the president, W. A. Hitchcock, G. H. Sage, P. B. Gale and A. L. Shipman; and directors, those named and Edward K. Root, Bristol, Conn., and Walter L. Goodwin.

* * *

THE GUY Steel Castings Co., West Hartford, Conn., incorporated July 7 with $50,000 capital, has organized with the following officers: President, John A. Guy; vice president, John E. Sinnott; treasurer, W. R. Bennet; and secretary, George B. Kinghorn.

* * *

SHIPMENT was made recently by the Brown Hoisting Machinery Co., Cleveland, of a 10-ton electric crane for use in a coal mine on Spitzbergen in Norway, said to be the most northern mine in the world. The company sometime ago sent a 10-ton locomotive crane to the same place.

* * *

RECENTLY the George Fuller Sons Iron Foundry, Hallowell, Me., was purchased by E. L. Gedney of Augusta, Me. The company was incorporated in 1840, and the plant is estimated to be worth approximately $20,000. For many years the company was the largest iron foundry in New England.

* * *

THE Sullivan Machinery Co., Claremont, N. H., Chicago and Michigan City, Ind., is considering the erection of another plant in the West because the state assessors of New Hampshire have increased the valuation of its property in that state from $2,000,000 to $4,300,000. It will not abandon its New Hampshire plant in the event of the contemplated building, but will remove the stock to the new location to lower the assessed valuation. The company has awarded a contract for a new building at Michigan City.

* * *

THE Chicago Flanging & Pressing Co. has bought from the Ketler-Elliott Co. the steel fabricating plant of the latter at 3121 South California avenue, Chicago. The plant consists of a 1-story building for fabricating purposes and an office building. The purchasing company is a new company which will specialize in heavy steel stamping work.

* * *

LUDWIG Niemchek, for many years conducting a machine shop as Niemchek & Wenzel at 301-303 Poplar street, Milwaukee, has reorganized as the L. Niemchek Mfg. Co., with capital stock of $25,000. The charter grants authority to manufacture, buy, sell and deal in special tools, machinery, metal stampings, etc. Edward Wiznerewicz and Stanley Crzechowiak are associated with Mr. Niemchek in the new organization.

* * *

CONTROLLING interests in the Bain Wagon Co., Kenosha, Wis., established in 1840, have been purchased from George A. Yule and associates by W. L. Dixon and J. F. Griswold, for 15 years Pacific coast distributors of the Bain line at Los Angeles. The company is capitalized at $400,000 and is one of the leading wagon makers in the country. George A. Yule will continue as president but the active factory and business management will be in the hands of Messrs. Dixon and Griswold.

* * *

PRINTING presses to print a multiplicity of colors in a single press run will be built by the Clayborn Process Corp., Milwaukee, in a new plant now under construction at Humboldt avenue and Becker street. L. W. Claybourn, president of the corporation, is head of a paper carton and package company at Menasha, Wis., and has also manufactured the presses on a limited scale at Menasha for several years. The new plant includes a main factory, 122 x 125 feet, 1-story; a 2-story structure, 103 x 122 feet, for assembling, storage, shipping and offices; and a boiler and power house, 30 x 80 feet. The work is being carried out under the supervision of Herman J. Esser, 82 Wisconsin street, Milwaukee, architect.

* * *

NEW TYPES of combination valves and traps for vacuum, vapor and atmospheric systems of heating are to be manufactured by the Heating & Power Appliance Co., which recently was incorporated with $60,000 capital and has opened a shop at 200 Pleasant street, Milwaukee. F. L. Hutchinson, heating and power plant engineer, is president and general manager. M. V. Eichholz is vice president, and W. M. Tuckewell secretary and treasurer. Besides manufacturing valves and other specialties the new company is jobbing heating and power equipment, appliances, steam and electric pumps, and general equipment of this character.

* * *

FRANK D. CHASE, Inc., Chicago, engineer, is in charge of construction of alterations and additions to the North Chicago plant of the Chicago Hardware Foundry Co., which include a new foundry unit and an enlarged coremaking department; a new gray iron foundry and enlarged and remodeled steel and brass foundries of the Bucyrus Co., South Milwaukee, Wis.; and addition to the foundry plant of the H. B. Smith Mfg. Co., Westfield, Mass. The Chase organization also is preparing plans for an addition to the Chicago plant of the Delta Star Electric Co. and for a foundry and machine shop at Lancaster, Pa., for the Burnham Boiler Corp., Irvington, N. Y.

* * *

ACCORDING to reports from Schlesingerville, Wis., a company to manufacture electric furnace steel which has recently been formed by Milwaukee and Appleton, Wis., interests, has leased the former Rex gray iron foundry and will remodel it, installing electric furnace equipment as soon as the Milwaukee Electric Railway & Light Co., is able to build a power line to that community. The existing transmission lines are not adequate to handle the current required for the operation of the proposed new steel foundry. The identity of the promoters of the new company has not been divulged, pending maturity of negotiations.

Rail Strike Halts Tool Sales

Users Defer Purchasing Until Strike Settlement Is Effected—Orders Are for Single Units—Price Tendency Is Upward but Some Reductions Are Reported—Numerous Single Crane Awards Noted

PENDING the settlement of the rail strike but little demand for machine tools and shop equipment is expected. Coupled with the warm weather, the strike is having an adverse effect on buying and while many single tool orders are being placed, it is noticeable that most of the business done is for local or at the best suburban delivery. Numerous single tool inquiries are in the market, and for that matter there are a number of large lists current, but only on the former is any action being shown. Railroad buying hinges upon the strike settlement.

However, despite the general attitude of the railroads during the week just past the Rutland, the New York Central and the Santa Fe railroads have made purchases. General industrial buyers in practically all instances have confined orders to single units. Inquiries current include ones from the Studebaker Corp., South Bend, Ind., the Continental Motors Co., and the General Electric Co. Early action is expected on these lists.

Prices continue to get stronger although several instances have been noted where the tendency has been counter to this. An instance of this is the reduction of 10 per cent on upright drills announced by several builders. However, the price tendency is upward.

While the market for cranes and allied equipment is more active than was the case several months ago, it hardly can be described as "booming." Sales of single installations are more numerous as are inquiries. It is thought the present rail strike is to some extent hindering the closing of considerable business. During the week a number of single installations were noted. Pending crane business includes an inquiry for nine.

Railroad Machine Tool Purchases Are Deferred

NEW YORK, July 18.—Outstanding in the local machine tool market is the award of approximately 20 machine tools for the Essex County Vocational schools, Newark, this business being distributed among several builders. No action has yet been taken on the list reported last week for the General Electric Co., Schenectady, N. Y. The street cleaning department, this city, is reported to have closed on three lathes from a Worcester, Mass., builder.

Due to strike troubles, the railroads in this district con-

Crane Awards and Inquiries of the Week

Orders Placed

One 10-ton crane additional for the Oil Well Supply Co., Oil City, Pa., to the Pawling & Harnischfeger Co., Milwaukee.

One additional 5-ton pit riveter, 2-motor hoist for the Greenville Steel Car Co., Greenville, Pa., to the Shepard Electric Crane & Hoist Co., Montour Falls, N. Y.

One 2-ton hoist for the Pond Creek Coal Co., Huntington, W. Va., to the Shepard Electric Crane & Hoist Co., Montour Falls, N. Y.

One 15-ton Shaw crane to an unidentified buyer in Pittsburgh territory, to Manning, Maxwell, Moore, Inc.

Two 84 x 84 single drum hoists to handle 14,500 feet of 1¼-inch cable for the Southern California Edison Co. to Wellman-Seaver-Morgan Co.

One Pawling & Harnischfeger caterpillar dragline crane for Yuma county, Ariz., highway commission to Herbert C. Lagg Co.

One 10-ton electric crane, 80-foot span, for M. W. Kellogg Co., Jersey City, N. J., to Niles-Bement-Pond Co., 111 Broadway, New York.

One 4-ton handpower crane for Peru, to Niles-Bement-Pond Co., 111 Broadway, New York.

Two 10-ton electric overhead cranes for the Bartlett Hayward Co., Baltimore, reported placed with the Chesapeake Iron Works.

One 5-ton electric overhead crane for the Meeker Union Foundry Co., Norwalk, Conn., placed with the Shepard Electric Crane & Hoist Co., Montour Falls.

One 15-ton bucket handling crane, 45-foot boom, for the Dominion Construction Co., Inc., Niles, Mich., to the Industrial Works, Bay City, Mich.

One 50-ton electric crane, with 70-foot span, for Penn Central Power Co., Saxton, Pa., through Day & Zimmerman, Philadelphia, to Bedford Foundry & Machine Co., Bedford, Ind.

One 20-ton locomotive crane, for Penn Central Power Co., Saxton, Pa., to the Ohio Locomotive Crane Co., Bucyrus, O.

One 15-ton electric crane, 63-foot span, for Long Island railroad, to Whiting Corp., Harvey, Ill.

One 20-ton gantry, 32-foot span, for Southern Pacific railroad, to Whiting Corp., Harvey, Ill.

One 12-ton locomotive crane for American Deywood Co., Chester, Pa., to Orton & Steinbrenner Co.

One 5-ton electric crane, 62-foot span, for new Camden, N. J., plant of Keickhefer Container Co., Milwaukee, to Pawling & Harnischfeger Co., Milwaukee.

Two 2-ton handpower cranes, 38-foot span, awarded through Dwight P. Robinson & Co., 61 Broadway, New York.

One 100-ton locomotive hoisting equipment for export to Whiting Corp., Harvey, Ill.

One 15-ton locomotive crane for contractor of New London, Conn., to Browning Co., Cleveland.

One 20-ton locomotive crane for Northern Pacific railroad, to Browning Co., Cleveland.

One 23-ton locomotive crane for Newtown Creek Coke & Coal Co., Brooklyn, to McMyler-Interstate Co., Cleveland; previously reported placed, but buyer not mentioned.

Orders Pending

One 10-ton electric traveling crane, with 50-foot span for the McGann Mfg. Co., York, Pa.; bids being taken.

Two 5-ton, one 10-ton and one 25-ton cranes for the Frick Co. foundry at Waynesboro, Pa.; bids being taken.

One 100-ton traveling overhead crane for the Merced Irrigation district. Bids to be called about Aug. 10.

One 10-ton crane, 44-foot span, for American Car & Foundry Co.

One 110-ton electric overhead crane, 50-foot span, inquired for through New York engineer.

Several overhead cranes for Newport News Shipbuilding & Drydock Co.; specificatoins not yet issued.

One 60-ton, 4-motor crane with 10-ton auxiliary, for power plant at Pinegrove, Pa.; J. G. White Engineering Corp., 43 Exchange place, New York, engineer in charge.

Nine cranes for an Ohio interest; awards not yet announced.

One 30-ton, 1-motor crane, 52-foot span, to be bought by C. E. Sharp, St. Louis, for Mexican manufacturer.

Car dumpers and other coal handling equipment for $3,000,000 coal pier at Sewall's Point, Va., for Virginian railways, Norfolk, Va.

The Daily Wisconsin News is an important newspaper with a large circulation. The Evening Wisconsin was established in 1847, and the Milwaukee Daily News in 1885; these two old and favorably known journals having been merged in the Wisconsin News.

IRON AND STEEL.

CLEVELAND, O.—*The Iron Trade Review* today says:

"Fewer outstanding tonnages are appearing among current iron and steel sales, yet the miscellaneous flow of small orders is surprisingly well maintained. It is this fact that reveals a condition of reduced stocks and of fundamental consumptive requirements which it is believed will come into greater evidence after the general restraint upon buying at the year's end shall have been lifted. Steel works operations are a little lower this week and the industry has adjusted itself to the expectation of a quieting down period for the next few weeks.

"November's relatively slight gain in steel ingot production of 2.7 per cent was in line with the manifest difficulty the market has encountered in continuing its expansion much above the 50 per cent mark. The November output was at the annual rate of 23,580,000 tons, compared with the rate of 22,970,000 tons in October. This indicates an activity of approximately 54 per cent of operating capacity on the basis of the high record output of ingots in 1917.

"The slow decline in the Review's composite market average

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tinue to defer action. The New York Central has closed on a turret lathe but no buying is otherwise noted. No railroad inquiries are reported. All in all, the local market may be regarded as only fairly active. Counter to the general trend of prices, reductions of 10 per cent in upright drills have been announced by several builders.

A fair amount of crane business is being placed and several sizable orders are in contemplation for the near future. Considerable interest is manifested in the requirements of the Brooklyn Edison Co., Brooklyn, which is soon to close on 9000 tons of steel for a power unit. At the same time, other public utility work is likely to develop shortly. The New York & Queens Power & Light Co., Long Island city, is to start work shortly on a $50,000 power plant at Maspeth, L. I. Both these jobs will likely require a fair amount of conveying equipment.

Sheet Working Tools Active

CHICAGO, July 18.—Inquiry for individual tools has improved during the week, according to several dealers here. Railroads, however, continue to hold up some attractive lists pending the outcome of the strike. The Santa Fe railroad has added 10 or 12 tools during the week to its purchases. The recent purchases include five boring mills and several lathes. Both the Illinois Central and the Union Pacific railroads have attractive lists which are expected to be closed as soon as the strike situation clears. Other buyers in the market include the Continental Motors Co., the Studebaker Corp., a farm implement manufacturer in Dubuque and an Omaha user.

The railroads for the most part persist in a belief that tool prices will decline. Dealers, however, are of the opinion slight advances will be made between now and the end of the year. Already a firmer tone is apparent in secondhand transactions and some new equipment has been advanced. Notable in this advance is a 5 per cent increase on radial drills, effective July 1.

Sales during the week include 12 tools to a Chicago manufacturer for equipping a tool room, three tools to a Wisconsin manufacturer of automotive parts, and a large number of punches, shears and other sheet and plate machinery to fabricators, manufacturers of electric devices, farm implement manufacturers and others.

Rail Strike Affects Tool Shipments

CLEVELAND, July 18.—Tied-up conditions of the railroads, which apparently are growing worse, as the strike of railroad shopmen continues, are having an adverse effect upon the machine tool and shop equipment market in this district. Only in exceptional cases are orders from out of town being placed and none of these, so far as can be learned, involve more than a single tool at a time. In a number of instances, tool dealers report they have been unable to ship machines for three and four days at a time, and as a consequence such freight is beginning to pile up at freight terminals. As a result of this condition, prospective buyers practically have left the market until the existing situation is considerably improved, and about the only business of any size expected by machinery interests is that from local users and ones located in nearby cities, where equipment can be transported by truck.

Typical sales in this district during the past week are those of four machines, each of which went to individual buyers. These included a gear hobber, a drill press, one shaper and one milling machine. Out-of-town sales included a turret lathe to an Indianapolis user and a boring mill to a Detroit buyer. Numerous other single tool sales were made but none were considered representative of market conditions as most of them were of secondhand equipment. New equipment is more in demand although the used tools still are by far in greatest demand.

Numerous single tool inquiries are in the market but according to some dealers there are not as many active as has been the case for some time past. The several large sized inquiries from the railroads and others are inactive. Regarding the railroad lists no action on these is expected until the present labor trouble has been settled. The Youngstown, O. board of education has purchased some of the equipment for which it inquired several months ago and dealers here are expecting action shortly by the Cleveland board of education on the equipment requirements for three junior high schools, bids on which were opened yesterday. Awards are expected within a week.

While crane and allied equipment manufacturers in this district report the outlook more encouraging, they state that little equipment really is moving. However, inquiries are on the increase and several state that if it were not for the coal and rail strikes a number of pending jobs would already have been closed. During the past few days the Brown Hoisting Machinery Co., Cleveland, shipped an electric crane to the workings of the Arctic Coal Co., a Swedish organization, in Spitzbergen.

Large Crane Order Is Placed

PITTSBURGH, July 18.—Another large crane award features the equipment market this week; it involves nine cranes as noted in the accompanying list. Several other single crane awards are noted, some of which are unidentified. A number of new crane inquiries are noted, one seller reporting the receipt of new inquiries involving 10 cranes during the past week. Hoist inquiries continue particularly numerous.

Railroad and coal strikes, hot weather, vacation periods, etc., all bear the brunt of the lack of buying activity in connection with machine tools, although a number of single machine purchases are noted. One seller reports the disposal of a pipe machine and a punch press; another representative new and used machinery house sold a 30-inch open-side planer to an eastern Pennsylvania user and sold three machines, a new 24-inch shaper, a used 3-inch pipe machine and a used 24-inch lathe to a West Virginia buyer; while a third disposed of a press, a 30-inch squaring shear and a set of chuck jaws for an 8-foot boring mill. A 19-inch engine lathe has been sold, subject to inspection. An inquiry is in the market for a double crank power hammer while one comes from Buffalo for a large alligator shear and the Chesapeake & Ohio railroad wants, in addition to other machinery, a 42-inch boring mill. The Reliance Machinery Sales Co. has purchased two large carloads of machinery from a Cleveland fabricating shop, including punches, shears, riveting machines and toolroom equipment.

T. Vivian Miles and his son J. Miles, operating the Newton Chamber Foundries, Sheffield, England, have been in Pittsburgh this past week purchasing foundry equipment as well as other machinery and Richard Thomas of the Richbury Collieries, Inc., New Castle, New South Wales, Australia, has been investigating various types of coal mining machinery.

Sales and Inquiries Improve

BOSTON, July 18.—Slight increases in sales and better inquiry for tools is reported in this district. No new lists of size have appeared but the small inquiries received disclose more interest on the part of purchasing agents. The Rutland railroad placed an order for two motor-driven grinders and a technical school in Boston has

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purchased a lathe. Another lathe was taken by a Bangor, Me., paper manufacturer and still another lathe by a Taunton stove manufacturer.

A noticeable feature of the market this week has been the broadening of inquiries from outside New England. Several western railroads have been coming here for tools, for which some fair sized inquiries are indicated and some New England manufacturers have placed some business in heavy tools. Inquiries are also reported from the South and West for some secondhand boring mills. Other dealers state that while inquiries are good, they have not yet reached a point where purchasers are in a mood to close contracts.

Following recent advances in radial drill prices by one firm another New England dealer has withdrawn a 10 per cent concession from list prices which has been extended to customers, which indirectly is an advance. It is not unlikely that this may be followed by an announcement of a straight 10 per cent advance.

Many dealers believe the end of the chaotic price situation is near. Most of the stocks on hand are liquidated and makers are considering the necessity of setting prices on a basis of replacement values. Although the list prices of most of the dealers are known some of the smaller firms are said to have slashed prices on occasion for the purpose of getting the business at any cost. In several instances 12½ per cent under lists has been offered buyers after apparently firm prices have been quoted and one or two notorious instances have been named where over 50 per cent has been conceded on a heavy tool.

Orders Confined to Single Tools

SAN FRANCISCO, July 14.—Machine tool buying here appears confined to single unit requirements. However, these are coming in from widely diversified sources. Despite the relatively quiet month just past, there is a general feeling that future demand will be large. Schools and colleges are preparing to release lists and dealers are expecting some fair orders from other sources. Secondhand and used equipment dealers report a good business done in June. However, the greater portion of the good used tools on the market have been absorbed.

Eccles & Smith Co. report the sale to local interests of a radial drill, and two shapers. The Healdsburg high school is opening bids this week for three lathes and one miller and supplies, while the San Diego high school is receiving bids for four small screw cutting lathes. The Solano Mfg. Co., Vallejo, placed orders for four drill presses, grinders and some small equipment. The Southern California Edison Co. is taking bids on three air compressors. Among sales reported by the Herberts Machinery & Supply Co. were shapers to the following buyers: Working Metal Door Co.; Garbe Mfg. Co.; Saunders Bros. Co.; Alaska Treadwell Co., and J. B. McAuley Foundry Co., a lathe to the Richmond high school; a lathe to the California Polytechnic College, and three screw machines and a lathe to the Kosac Sales Co

Crane business in this section is restricted and few awards have been noted. With the actual starting of work on the many hydroelectric developments planned, crane men anticipate some good sized orders.

Volume of Equipment Orders Fair

TORONTO, July 18.—Canadian equipment manufacturers and dealers report a fair volume of business, but practically every order is limited to one or two tools. The bulk of present business appears to be from companies in need of a machine or tool for replacent purposes. The Canada Machinery Corp., Galt, Ont., reports a decided improvement in the demand for its line of equipment and reports it recently increased its working force by 20 men, due largely to the improvement in demand for woodworking machinery. In most cases dealers say that the demand for woodworking equipment greatly exceeds that for metalworking lines.

Orders for equipment placed during the past week included one from the board of education, Sarnia, Ont., for a technical school and collegiate institute. The contract which was placed with the Charles A. Strelinger Co., Windsor, Ont., included five lathes, two gas furnaces, one electric furnace, welding equipment, grinder and an anvil. The board of control, Toronto, Ont., has awarded the contract for the supply of a 4,000,000-gallon centrifugal pump for the Island pumping station, to John Inglis Co., Strachan avenue, Toronto.

The Durant Motors of Canada, Ltd., Roy Bank building, Toronto, Ont., is receiving bids for a factory addition at Leaside, Ont., to cost $500,000. The Windsor Steam Motors, Ltd., a branch of the Trask Detroit Steamer Co., Detroit, is making arrangements for a plant at Windsor. The Peninsula Cord Tire Co., 45 John street, south, Hamilton, Ont., plans a manufacturing plant at Hamilton.

Construction and Enterprise

Concise and Timely Business Building Opportunities from the Field of Industry

East of the Mississippi River

BENTON, ALA.—The power house of the Ward Lumber Syndicate recently was damaged by fire.

MONTGOMERY, ALA.—The car and locomotive shops of the Atlantic Coast Line railroad recently were damaged by fire.

BANTAM, CONN.—A $50,000 plant addition will be erected here by the Bantam Ball Bearing Co. According to plans the structure will be 2-stories, 50 x 104 feet.

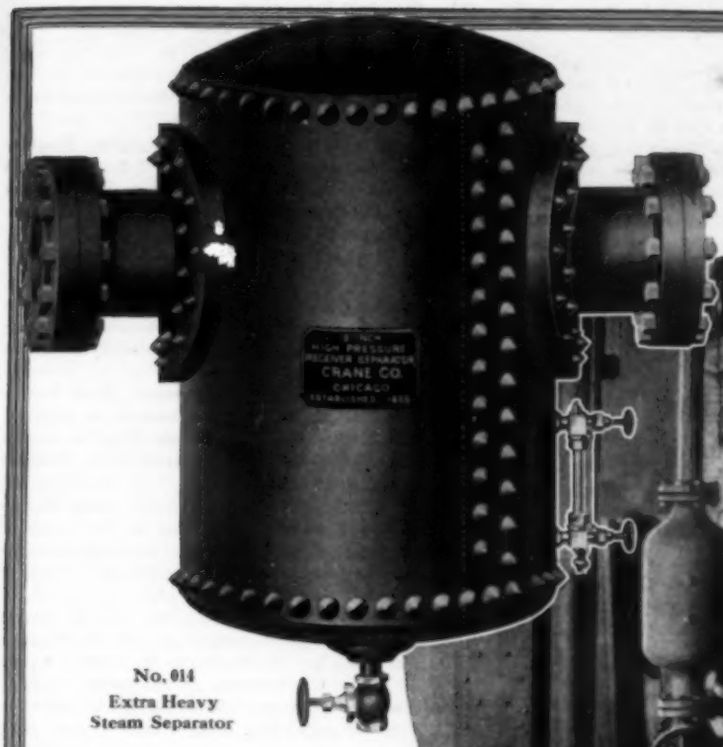
HAMDEN, CONN.—Plans have been completed for a 1-story, 100 x 194-foot factory and a 1-story, 106 x 115-foot factory addition for the Safety Car Heating & Lighting Co., New York.

HARTFORD, CONN.—The Hartford Products Co. has been incorporated to make automobile parts with $100,000 capital, by Charles M. Bigelow, Joseph G. Woodbury, and others.

TALLAHASSEE, FLA.—The Rogers Bracket Co. has been incorporated to manufacture brackets with $50,000 capital stock, by John H. Nelson, O. B. Acker, and others.

CENTERVILLE, ILL.—The Sterling Electric

CRANE



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BRIDGEPORT, CONN.
BROOKLYN, N. Y.
BUFFALO, N. Y.
CAMDEN, N. J.
*CEDAR RAPIDS, IOWA
*CHARLESTON, W. VA.
CHICAGO, ILL.
CINCINNATI, OHIO
*CLEVELAND, OHIO
DAVENPORT, IOWA
*DENVER, COLO.
DES MOINES, IOWA
DETROIT, MICH.
DULUTH, MINN.
EAST CHICAGO, IND.
*ERIE, PA.
*EVANSVILLE, IND.
FARGO, N. D.
*FRESNO, CAL.
*FT. WAYNE, IND.
*GALESBURG, ILL.
GRAND RAPIDS, MICH.
GREAT FALLS, MONT.
HARLEM, N. Y.
*HARRISBURG, PA.
HARTFORD, CONN.
INDIANAPOLIS, IND.
*JACKSONVILLE, FLA.
*JOPLIN, MO.
KANSAS CITY, MO.
KNOXVILLE, TENN.
LEWISTON, IDAHO
LIMA, OHIO
*LINCOLN, NEB.
LITTLE ROCK, ARK.
LOS ANGELES, CAL.
*LOWELL, MASS.
*MADISON, WIS.
MANKATO, MINN.
MEMPHIS, TENN.
MINNEAPOLIS, MINN.
*MOBILE, ALA.
MUSKOGEE, OKLA.
*NASHVILLE, TENN.
NEWARK, N. J.
*NEW HAVEN, CONN.
*NEW LONDON, CONN.
NEW ORLEANS, LA.
NEW YORK, N. Y.
*NORFOLK, VA.
OAKLAND, CAL.
OGDEN, UTAH
OKLAHOMA CITY, OKLA.
OMAHA, NEB.
OSHKOSH, WIS.
PHILADELPHIA, PA.
*PHOENIX, ARIZ.
PITTSBURG, PA.
POCATELLO, IDAHO
PORTLAND, ORE.
*PORTLAND, ME.
*PROVIDENCE, R. I.
READING, PA.
RENO, NEV.
ROCHESTER, N. Y.
ROCKFORD, ILL.
SACRAMENTO, CAL.
*SAGINAW, MICH.
SALT LAKE CITY, UTAH
SAN FRANCISCO, CAL.
*SAN JOSE, CAL.
*SANTA BARBARA, CAL.
SAVANNAH, GA.
SEATTLE, WASH.
*SHREVEPORT, LA.
SIOUX CITY, IOWA
*SOUTH BEND, IND.
SPRINGFIELD, MASS.
*SPRINGFIELD, ILL.
SPOKANE, WASH.
*STAMFORD, CONN.
*ST. JOSEPH, MO.
ST. LOUIS, MO.
ST. PAUL, MINN.
SYRACUSE, N. Y.
TACOMA, WASH.
TERRE HAUTE, IND.
*TOPEKA, KAN.
TULSA, OKLA.
*UTICA, N. Y.
WASHINGTON, D. C.
*WATERBURY, CONN.
WATERTOWN, S. D.
WICHITA, KAN.
WINONA, MINN.
*WILKESBARRE, PA.
*WORCESTER, MASS.

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46-61 LEMAN ST., LONDON, E. 1, ENG.
*BIRMINGHAM, *MANCHESTER, *LEEDS, *GLASGOW, *CARDIFF.

Steel Casting Co., Falling Springs avenue, has been incorporated to manufacture and deal in castings, forgings, etc., by Claude W. Harrell, Raymond O. Shive, George E. Baker, and others. The company is represented by Raymond O. Shive, 1519 Syndicate Trust building, St. Louis.

CHICAGO—The Atwood Stewart Vacuum Machine Co. has increased its capital stock from $25,000 to $50,000.

CHICAGO—The Radio Industries, Inc., 82 West Washington street, has leased space for the manufacture of metal specialties.

CHICAGO—The Service Tool Die & Mfg. Co. has increased its capital stock from $8100 to $25,000.

CHICAGO—The McAdams Mfg. Co. has awarded a contract to Bowie, Lydon & Co., Inc., for a factory building to cost $100,000.

CHICAGO—The Delta Star Electric Co. is having plans prepared for a plant addition to cost about $100,000. Frank D. Chase, Inc., Chicago is engineer.

CHICAGO—The American Water Heater Corp., 2838-42 West Twenty-first street, has been incorporated with 2000 shares of no par value by Louis Acby, Henry Kocourek and E. F. Gillis. The company is represented by Charles J. Michel, 130 North Clark street.

CHICAGO—The Macinnes Mfg. Co., 10925 South Michigan avenue, has been incorporated with $24,000 capital stock to manufacture and deal in metal products, etc., by Neil Macinnes, M. V. Macinnes and Harold L. Hart. The company is represented by Goodsell F. Henke, 38 South Dearborn street.

CHICAGO—The Tyree Auto Radiator Mfg. Co., 814 West Eighty-third street, has been incorporated with $100,000 capital stock, by R. A. Tyree, J. E. Bradley, Richard Barr, C. E. Ohlin, J. Vanloan, L. A. Harkness and A. E. Spiese. The company is represented by William W. Moss, 543 First National Bank building.

CHICAGO—The International Elevator Equipment Corp., 1422 38 South Dearborn street, has been incorporated with 100 shares of no par value, by Lawrence E. Dowd, Julius L. Steiner, and Julian C. Ryer. The company is represented by Julian C. Ryer, 1422 First National Bank building.

CHICAGO—The Standard Metal Screen & Weather Strip Co., suite 503, City Hall Square building, has been incorporated with $50,000 capital stock, by C. Walter Keeling, G. F. Nordblad and Charles C. Crane. The company is represented by Ferdinand J. Karasak, 1801 Conway building.

CHICAGO—The National Transformer Mfg. Co., 154 Whiting street, has been incorporated with 250 shares of no par value to manufacture and deal in electrical and mechanical appliances, by Irwin J. Mendels, William C. Ruder and John W. Cremerius. The company is represented by Frank E. Dingle, 130 North Wells street.

DANVILLE, ILL.—The Witwer Battery Co., 630 St. Louis street, recently incorporated with $500,000 capital stock, plans a 1-story plant addition, 52 x 127 feet.

GALESBURG, ILL.—The Gillette Multiple Picture Machine Co., 81-89 Prairie street, has been incorporated with $50,000 capital stock by Leroy D. Gillette, David Wallk, Rae Tennery and others. The company is represented by Welsch & Zetterholm.

JOLIET, ILL.—The Central States Steel Equipment Co., 400-410 South Center street, has been incorporated with $10,000 capital stock, by Adolf E. Fohn, Paul R. Sparks and B. I. Fohn. The company is represented by Paul R. Sparks, P. O. box 1043.

KANKAKEE, ILL.—The Thermalene Gas Corp., 413 City Bank building, has been incorporated with $60,000 capital stock by J. S. Knight, S. D. Knight and Linus Wolf. The company is represented by Reeve Hobbie, 413 City National Bank building.

PEORIA, ILL.—The Schmidgall Tool Co., 617 Lincoln avenue, has been incorporated with $10,000 capital stock to manufacture and deal in tools, etc., by Carl H. Schmidgall, Lester R. Renegar, Roy A. Breymeier, and others. The company is represented by Charles Tjadem, room 8, Anheuser Neill building.

INDIANAPOLIS—The Zenite Metal Co. plans a 1-story building, 100 x 200 feet.

INDIANAPOLIS—Robert H. Hassler, Inc., 1535 Naomi street, has awarded a contract for a 2-story building, 27 x 120 feet.

JACKSONVILLE, IND.—The power house and other mechanical departments at the plant of the Green Valley Coal Mining Co. recently were damaged by fire.

LEXINGTON, KY.—The Erd Mfg. Co., 117 Sherman avenue, plans a 1-story machine shop.

LOUISVILLE, KY.—The Louisville Gas & Electric Co. plans a power plant addition.

HALLOWELL, ME.—The iron foundry of George Fuller's Sons is to be taken over by E. L. Gedney and other Augusta, Me., business men, who plan to incorporate the business.

PORTLAND, ME.—The Neward Radio Mfg. Co. has been incorporated with $1,000,000 capital by William R. Anthoine and F. G. Prince.

BALTIMORE—The Republic Boiler & Radiator Co. plans two 1-story additions, 20 x 150 feet and 49 x 60 feet, to cost about $50,000.

ATTLEBORO, MASS.—The L. M. Flanders Co. has been incorporated to make jewelry with $50,000 capital, by Leon M. Flanders, Samuel H. Flanders, Hartford, Conn., and Frederick S. Sibley, Providence, R. I.

BOSTON—The Boston Sand & Gravel Co., 88 Broad street, plans a 1-story machine shop.

BOSTON—The Lowell Timer Co. has been incorporated with $50,000 capital, by George R. Townsend, Winchester, Mass., Philip L. O'Brien, G. Duthie-Strachan and Paul H. Tardival.

BOSTON—The Lamson Co. has been incorporated to make pneumatic and mechanical contrivances with $3,000,000 capital, by A. Francis Hayden, Wellesley, Mass.; Howard Norton, Newton, Mass.; A. Edward Garland, Somerville, Mass., and others. It is a subsidiary of the American Pneumatic Service Co.

CAMBRIDGE, MASS.—The Cambridge Iron & Metal Co. has been incorporated with $5000 capital, by Jacob Grossman, B. Grossman and Simon Broomfield, Chelsea, Mass.

MALDEN, MASS.—The Jacrim Mfg. Co. has been incorporated to make metal products with $10,000 capital, by Charles H. Jackson and Arthur L. Jackson, both of Melrose, Mass., and Chester A. Rimmer.

MONTAGUE CITY, MASS.—The Montague City Rod Co. is to erect a 2-story, 50 x 70-foot office building.

NEW BEDFORD, MASS.—The New Bedford Boiler & Machine Co. has let the contract for a 3-story, 60 x 165-foot building.

WORCESTER, MASS.—The Coppus Engineering Corp. has been incorporated to take over the Coppus Engineering & Equipment Corp. with $500,000 capital, by Frans H. C. Coppus, Otto Wechsberg and Linwood M. Erskine.

BERRIEN SPRINGS, MICH.—The Chapin Co., South Bend, Ind., is reported planning an electric generating plant here.

CHARLOTTE, MICH.—C. I. Scott & Co., maker of metal products, plans to rebuild the part of its plant recently damaged by fire.

DETROIT—The Barton Auto Top Co. plans a factory building, 3-stories, 62 x 162 feet, to cost about $45,000.

DETROIT—The Charles B. Bohn Foundry Co., 3651 Hart street, plans a 1-story building, 46 x 60 feet, to cost about $45,000.

GRAND RAPIDS, MICH.—The Wolverine Metal Specialties Co. is being organized and will erect a 1-story, 40 x 80-foot machine shop at an estimated cost of $10,000.

JACKSON, MISS.—The Lauchly Foundry Machine Co. has been incorporated with $50,000 capital stock, by B. W. Lauchly, W. A. Scott and H. K. Stringer.

NEWARK, N. J.—The Newark Scale Works, 10 Hobson street, has acquired property, 25 x 100 feet, on which it plans an addition.

NEWARK, N. J.—The Public Service commission of New Jersey will close bids this week on 2000 tons of steel for an addition to the Essex power station.

SALEM, N. J.—The Common Sense Radius Rod Co. nas been incorporated to manufacture automobile radius rods with $150,000 capital stock, by Wesley Sinneckson, Morris C. Bonham and Robert P. Butcher.

BROOKLYN—The Brooklyn Edison Co. is expected to close bids shortly on 9000 tons of steel for a power plant here. It is expected that considerable conveying equipment will be purchased.

BROOKLYN, N. Y.—The Marko Metal Works has been incorporated with $20,000 capital stock by M. Planshaft, M. Woltztein and R. Tow. The company is represented by J. J. Lazaree, attorney, 25 West Forty-third street.

BUFFALO—The Buffalo Cold Drawn Steel Co. has increased its capital stock from $2,000,000 to $3,500,000.

BUFFALO—The Buffalo Steel Car Co., Inc., plans an office building, 2-stories, 40 x 50 feet, to cost about $30,000.

BUFFALO—The Buffalo Spring Service Co. has been incorporated to make springs, etc., with $10,000 capital stock by J. J. Frey, F. and F. J. Weigel. The company is represented by C. L. O'Connor, attorney.

BUFFALO—The Electra Radio Corp. has been incorporated to make wireless instruments with $50,000 capital stock by H. L. Jauch, W. M. Taylor and F. J. Maloney. The company is represented by Dirnberger & Moore, attorneys.

BUFFALO—The Universal Drier Corp. has been incorporated to make machinery with $300,000 capital stock by W. C. Lindsay, H. P. Miller and H. J. Kelly. The company is represented by Dudley, Stowe & Sawyer, attorneys.

BUFFALO—The Twin Filter Co., water filters, has been incorporated with $50,000 capital stock by G. W. Barker, G. Cochern and R. S. Richards. The company is represented by Lee, Ward & Ripley, attorneys, Lockport, N. Y.

IRVINGTON-ON-THE-HUDSON, N. Y.—The Burnham Boiler Corp. is having plans prepared for a foundry and machine shop at Lancaster, Pa. to cost about $250,000. Frank D. Chase, Inc., Chicago is engineer.

JAMAICA, L. I., N. Y.—A. H. Grebe & Co., Inc., 10 Van Wyck avenue, maker of wireless instruments, etc., has awarded a contract for a 3-story plant addition, 80 x 100 feet, to cost about $100,000.

LOCKPORT, N. Y.—The A. W. Jack Corp. plans a factory building, 1-story, 127 x 500 feet.

MASPETH, L. I.—A $50,000 power house will be erected here by the New York & Queens Electric Light & Power Co., Long Island City. The structure will be 1-story, 100 x 120 feet.

NEW ROCHELLE, N. Y.—The Wilart Instrument Co. has increased its capital stock from $100,000 to $1,000,000.

NEW YORK—The capital stock of the Syracuse Sander Mfg. Co. recently was increased from $10,000 to $50,000.

NEW YORK—The Modern Automatic Match Machinery Co. has been incorporated with $10,000

capital stock, by S. M. Friese, C. B. Kinberg, and others. The company is represented by S. M. Witner, 565 Fifth avenue.

NEW YORK—The New York Edison Co. plans a power unit for which conveying equipment will be purchased.

NEW YORK—The Terminal Engineering Co. has increased its capital stock from $50,000 to $500,000.

NEW YORK—The Monarch Appliance & Radio Corp. has been incorporated with $10,000 capital stock by A. J. Kollin, L. Goldberg, and others.

NEW YORK—The Herbine Chemical Co. has been incorporated with $25,000 capital stock by N. M. Goldstein, H. Herbst and S. Brown. The company is represented by Lieberman & Siegel, attorneys, 51 Chambers street.

NEW YORK—The Manhattan Crown Seal Co., bottle caps, etc., has been incorporated with $30,000 capital stock, by C. C. Abbott, L. M. Rosenthal and C. L. Hoadley. The company is represented by F. L. Kohlman, 27 Cedar street.

NEW YORK—E. A. Lister & Co. have been incorporated with $10,000 capital stock to make machinery, boilers, etc., by H. M. Towart, E. B. Griffin and L. Burbridge. The company is represented by J. K. Byard, attorney, 120 Broadway.

NEW YORK—Gillis & Geoghegan have been incorporated with $25,000 capital stock to make heating and ventilating apparatus by W. M. G. Watson, H. A. St. George and B. W. Dennis. The company is represented by Phillips & Avery, attorneys, 41 Park Row.

NEW YORK—The Conly Stoker Co. has been incorporated to make traveling grate stokers with $100,000 capital stock, by J. A. Conly, O. S. Magnus, J. H. Ellers Jr., and others. The company is represented by H. J. Toomey, 280 Broadway.

ONEIDA, N. Y.—The Hinman Milking Machine Co. has increased its capital stock from $15,000 to $100,000.

OSWEGO, N. Y.—The Fitzgibbon Boiler Co. plans a boiler shop, 1-story, 70 x 110 feet, to cost about $40,000.

PEARL RIVER, N. Y.—The Pearl River Wood Novelty Mfg. Co. has been incorporated with $20,000 capital stock to make wood products by D. Von Scosten Jr., F. J. Schmidt and J. Mayer. The company is represented by A. Helder, attorney.

SCHENECTADY, N. Y.—Plans have been completed by the General Electric Co. for a plant addition.

CARTHAGE, N. C.—The Sandhill Power Co. contemplates a steam power plant.

AKRON, O.—The American Vitrified Products Co. plans a machine shop to replace one damaged by fire some time ago. A building permit has been taken out.

AKRON, O.—The Akron Paint Products Co. has been incorporated with $50,000 capital stock by C. F. Beck, E. A. Ziesloft, Helen Hassler, M. H. Weyrick and B. Watters.

CINCINNATI—The Cincinnati Last Co. has increased its capital stock from $5000 to $15,000.

CINCINNATI—The Markel Bros. Co. plans a light manufacturing building.

CINCINNATI—The Wright Mfg. Co. has been incorporated with $5000 capital stock to manufacture metal specialties, by T. B. Wright, and others.

CINCINNATI—The Mitchell Steel Co. has been incorporated with $50,000 capital stock, by William H. Mitchell, Thomas B. Morris, Carl W. Frey, A. P. Farris and W. A. Rinckhoff.

CLEVELAND—The Builders' Structural Steel Co. has purchased a building at 2880 East Thirty-fourth street

CLEVELAND—The Kirby Mfg. Co., maker of sugar machinery, has increased its capital stock from $400,000 to $800,000.

CLEVELAND—The American Construction & Dredging Co. has been incorporated by Harold H. Burton, R. D. Gottfried, S. M. Dill, D. Fay and James J. McLaughlin Jr.

COLUMBUS, O.—The Brown Steel Co. is erecting a factory building, 275 x 305 feet, to cost about $150,000.

DAYTON, O.—The Lowe Bros. Co. plans an addition to its plant.

FREMONT, O.—The Safe Storm Shield Co. plans a 3-story factory building, 66 x 132 feet.

LIMA, O.—The East Iron Machine Co. is increasing its capital stock from $400,000 to $500,000.

WADSWORTH, O.—The Ohio Injector Co. is erecting a machine shop 4-stories at an estimated cost of $150,000.

WARREN, O.—The Commercial Galvanizing & Mfg. Co. has been incorporated with $500 capital stock by T. E. Bromley, J. J. Lehet, B. F. Fletcher, Ralph C. Kulow and Frank Baker.

PAWTUCKET, R. I.—The Carpenter-Martin Co., Inc., has been incorporated to build machinery with $10,000 capital, by Charles A. Carpenter, Augustus Martin and E. H. Brown.

CHESTER, PA.—The plant of the Textile Machinery Co., Fourteenth and Esrey streets, recently was damaged by fire.

PROVIDENCE, R. I.—The Automatic Meshbag Co. has been incorporated with $200,000 capital stock, by Edwin Spiedel, Albert Spiedel and William Thornley.

KNOXVILLE, TENN.—The Iddins Machinery Co. plans a 1-story plant building to cost about $50,000.

KNOXVILLE, TENN.—The Fire Grate Radiator Heating Corp. has been incorporated with $500,000 capital stock by C. F. Hodges, J. S. Hodges, and others.

MEMPHIS, TENN.—The Memphis Wire & Iron Works plans a factory building.

NORFOLK, VA.—After more than two years of tentative negotiations, the Virginian railway has definitely announced that work will be started immediately on the erection of a $3,000,000 coal handling pier at Sewells Point, near here.

HUNTINGTON, W. VA.—The Consolidated Light, Heat & Power Co. plans a $14,000 brick and steel building.

BARTON, WIS.—Parts and specialties for automobiles, etc., will be manufactured by the Barton Mfg. Co. which has been organized with $60,000 capital stock by Emil C. Backus, William J. Goebel and S. J. Driessel.

DODGEVILLE, WIS.—David Ellis, Thomas Gibbon and Clifford C. Briggs have organized the R. W. Mining Co., which has been incorporated with $25,000 capital stock. It will operate lead and zinc mines in the southwestern Wisconsin field.

ELKHORN, WIS.—Contracts have been let by Frank H. Holton & Co., band instrument manufacturers, for 2-story manufacturing addition, 40 x 100 feet. Some new machinery will be purchased. Frank Holton is president.

LACROSSE, WIS.—The Trane Co. is enlarging its factory and warehouse at an estimated cost of $45,000.

LITTLE CHUTE, WIS.—Gregor Lenz Motor Co. has let contracts for a garage and machine shop, 60 x 120 feet, part 2-story and basement.

MANITOWOC, WIS.—The Aluminum Goods Mfg. Co. plans a 3-story plant addition, 150 x 360-feet, to cost about $200,000.

MANITOWOC, WIS.—The Aluminum Goods Mfg. Co. has awarded the contract for the erection of a 3-story plant addition, 150 x 360 feet.

MANITOWOC, WIS.—The building on Washington street, near South Eighth street, has been leased by the Specialized Automotive Service Co., a new enterprise founded by John and Leo Bloomer and N. J. Jordan, of Madison, Wis., to conduct a general machine and repair shop business.

MARSHFIELD, WIS.—Blum Bros. Box Co., which is building a $50,000 addition for butter tub manufacture, is inquiring for a 100-horsepower heating boiler, planers, matchers, jointers, turning machines and other equipment.

MILWAUKEE—The coke work of the Milwaukee Coke & Gas Co. recently was damaged by fire.

MILWAUKEE—The Pittsburgh Plate Glass Co. plans an addition to its plant here, 5-stories, 86 x 140-feet.

MILWAUKEE—Paul Bringe & Co., 940 Third street, have the general contract to build a 1-story machine shop, 40 x 95 feet, for the Bahde Mfg. Co.

MILWAUKEE—An additional story to plant No. 8 will be erected by the HarleyDavidson

(Concluded on Page 202)

Business Changes

CHICAGO offices of the Mesta Machine Co., Pittsburgh, have been moved from the McCormick building to the Peoples Gas building. C. J. Mesta, second vice president, who has been in charge of the Chicago office for over a year, has returned to the home office in Pittsburgh to take charge of the sales department. A. B. Neumann, mechanical engineer, has been appointed manager of the Chicago office. Mr Neumann has been in the Chicago district for a number of years in the capacity of chief engineer and consulting engineer for several of the largest steel plants.

* * *

The Norton Company, Worcester, Mass., manufacturer of grinding wheels and grinding machines, has moved its New York city offices from 151 Chambers street to 53 Park Place. H. N. Harding, district manager of the grinding machine division, is in charge.

* * *

The field location of the Westinghouse Electric & Mfg. Co. at Richmond, Va., has been changed to a sub-office with headquarters in Room 503, Virginia Railway & Power Co. building, Seventh and Franklin streets. W. O. Peale has been placed in charge.

Iron and Steel Prices

Iron Ore

LAKE SUPERIOR ORES
Per Gross Ton Lower Lake Ports

Old range Bessemer, 55 per cent iron	$5.95
Mesabi Bessemer, 55 per cent iron	5.70
Old Range nonbessemer, 51½ per cent iron	5.20
Mesabi nonbessemer, 51½ per cent iron	5.05

PORT HENRY IRON ORE
Per Gross Ton, F.o.b., Port Henry

Old bed 21 furnace	$4.50
Old bed concentrates, 63 per cent	5.25
Harmony, cobbed, 63 per cent	5.25
New bed, low phos., 65 per cent	7.50
Lump ore for nx	6.00

Manganese Ore

Brazilian, 48 to 50 per cent c.i.f. Atlantic ports, 29 cents per unit.

Indian 48 to 50 per cent c.i.f. Atlantic ports, nominal.

Caucasian, 48 to 50 per cent, c.i.f. Atlantic ports, 28 to 29 cents per unit.

Fluor Spar

Washed gravel, Kentucky and Illinois mines, per ton $16.00 to 17.50

Rivets

Structural rivets, Pittsburgh	2.40c
Boiler rivets, Pittsburgh	2.50c
Rivets, ⅞-inch and smaller	70-5 to 70-10 off

Nuts and Bolts

NUTS
(Up to 1¼ and 1⅛ inches inclusive)

Hot pressed square or hexagon blank or tapped	$4.50 off list
Cold punched square or hexagon blank or tapped	$4.50 off list
Cold punched semifinished hexagon nuts ½-inch and larger	75-10 off
Cold punched semifinished hexagon nuts ⅜-inch and smaller	80-10 off
Case hardened, finished, hexagon	70 off

Price f.o.b. Pittsburgh, Packages of 50.

CARRIAGE BOLTS
⅜ x 6 inches, smaller and shorter

Rolled thread	60-10 off
Cut thread	60 off
Larger and longer	60 off

MACHINE BOLTS
(⅜ x 4 inches, hot pressed nuts)

Rolled thread	60-10-10 off
Cut thread	60-10 off
Larger and longer	60-10 off

(⅜ x 4 inches, cold punched nuts)

Cut thread	50-10 off
Larger and longer	50-10 off
Lag screws	60-10-10 off
Plow bolts Nos. 1, 2 and 3 heads	30-10 + 20 off
Tap bolts	30-10 off
Bolt ends with hot pressed nuts	60-10 off
Blank bolts	60-10 off
Rough stud bolts with nuts	50-10 off

Steel Pipe

Pittsburgh basing discounts, jobbers, carloads

Butt Weld

	Black	Galvanized
⅛-inch	54½	28
¼ and ⅜-inch	60	33½
½-inch	65	50½
¾-inch	69	56½
1 to 3-inch	71	58½
Lap Weld		
2-inch	64	51½
2½ to 6-inch	68	55½
7 to 8-inch	65	51½
9 to 12-inch	64	50½
REAMED AND DRIFTED		
Butt Weld		
1 to 3-inch	69	56½
Lap Weld		
2-inch	62	49½
2½ to 6-inch	66	53½
EXTRA STRONG—PLAIN ENDS		
Butt Weld		
⅛-inch	50½	33
¼ and ⅜-inch	56	38½
½-inch	62	50½
¾-inch	67	55½
1 to 1½-inch	69	57½
2 to 3-inch	70	58½
Lap Weld		
2-inch	62	50½
2½ to 4-inch	66	54½
4½ to 6-inch	65	53½
7 to 8-inch	61	47½
9 to 12-inch	55	41½
DOUBLE EXTRA STRONG		
Butt Weld		
½-inch	51	40½
¾ to 1½-inch	54	43½
2 to 2½-inch	56	45½
Lap Weld		
2-inch	50	40½
2½ to 4-inch	52	42½
4½ to 6-inch	51	41½
7 to 8-inch	47	33½

Wrought Iron Pipe

Pittsburgh basing discounts, jobbers, carloads

THREADS AND COUPLINGS

Butt Weld

	Black	Galvanized
⅛ and ¼-inch	3½	+22½
⅜-inch	36½	18½
½-inch	42½	27½
¾-inch	44½	29½
1 to 1½-inch	44½	29½
Lap Weld		
2-inch	39½	25½
2½ to 6-inch	42½	29½
7 to 12-inch	40½	27½

PLUGGED AND REAMED
Two points less than above

EXTRA STRONG, PLAIN ENDS

Butt Weld

⅛ and ¼-inch	+ 4½	+37½
⅜-inch	35½	23½
½-inch	42½	28½
¾-inch	44½	30½
1 to 1½-inch	44½	30½
Lap Weld		
2-inch	40½	27½
2½ to 4-inch	43½	31½
4½ to 6-inch	42½	30½
7 to 8-inch	35½	23½
9 to 12-inch	30½	18½
DOUBLE EXTRA STRONG		
Butt Weld		
½-inch	+27	+39
¾-inch	+ 7½	+19½
1-inch	+23½	+35½
1¼-inch	+ 7½	+19½
1½-inch	+ 6½	+18½
Lap Weld		
2 and 2½-inch	7½	14½
3 to 4-inch	12½	3½
4½ to 6-inch	11½	2½
8-inch	8½	

Boiler Tubes

L. C. L. discounts. C. L. 4-Point differential

STEEL

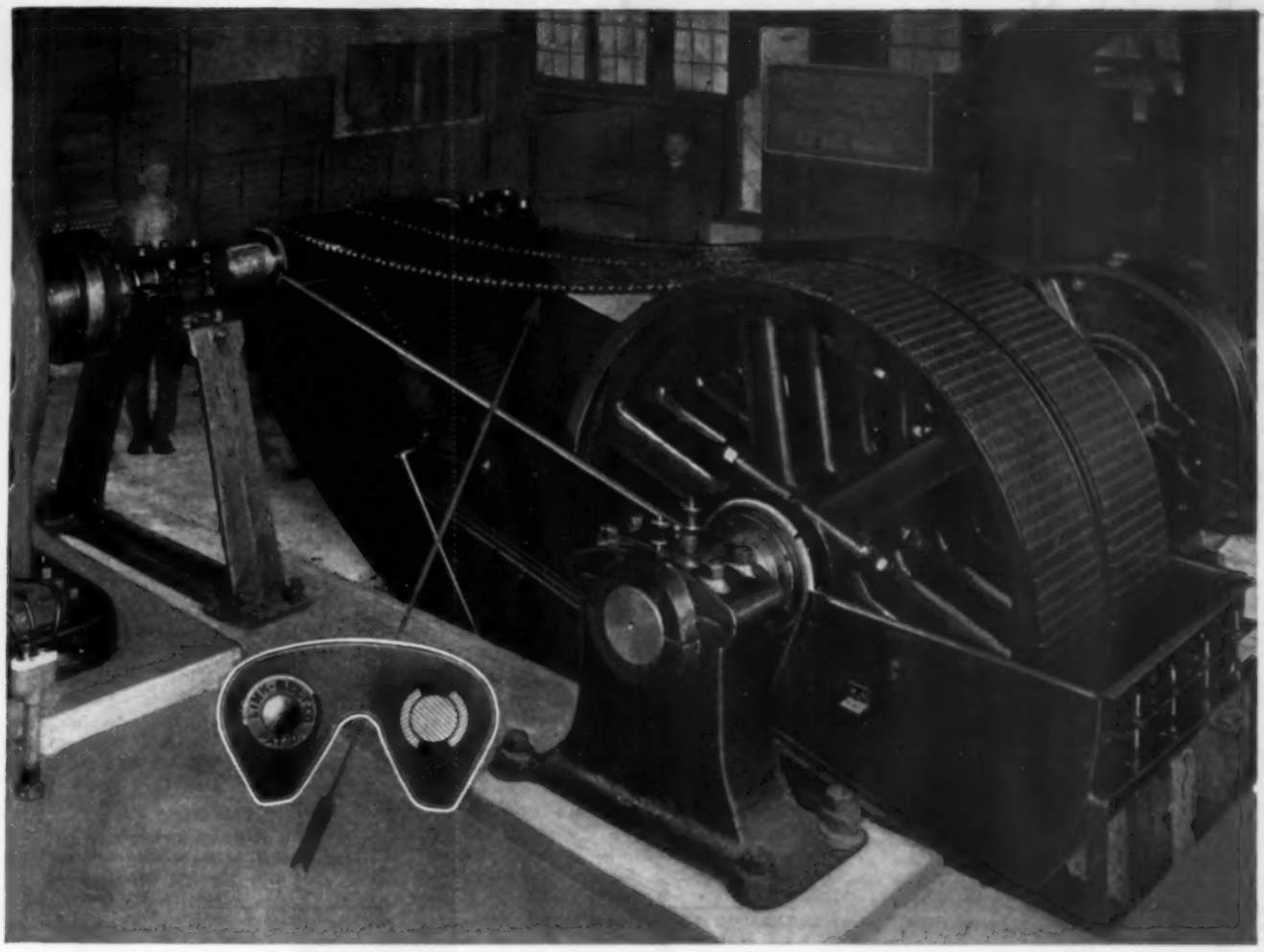
1¾-inch	22½
2 and 2¼-inch	37
2½ to 3-inch	48
3¼ to 4-inch	53
IRON	
1½-inch	1
1¾-inch	11
2 and 2¼-inch	21
2½ to 3-inch	26
3¼ to 4½-inch	28
SEAMLESS	
Hot-rolled or cold-drawn	
1-inch	56
1¼ and 1½-inch	48
1¾-inch	32
2 and 2¼-inch	35
2½ and 2¾-inch	39
3-inch	43
3¼ to 4-inch	48
4½ and 5-inch	40

Carload discounts 4 points larger.

Warehouse Prices

STEEL BARS

Boston	2.605c
Buffalo	2.60c
Chicago	2.48c
Cincinnati	2.60c to 2.85c
Cleveland	2.41c
Detroit	2.58c
New York	2.58c
Philadelphia	2.55c
San Francisco	3.40c
Seattle	3.35c
St. Louis	2.575c
St. Paul	2.76c
Los Angeles	3.40c
IRON BARS	
Boston	2.605c
Buffalo	2.45c
Chicago	2.48c
Cincinnati	2.50c to 2.75c
Detroit	2.58c
New York	2.48c to 2.58c
Philadelphia	2.55c
St. Louis	2.575c
SHAPES	
Boston	2.705c
Buffalo	2.70c
Chicago	2.58c
Cincinnati	2.70c to 2.95c
Cleveland	2.51c
Detroit	2.68c
New York	2.68c
Philadelphia	2.65c
San Francisco	3.40c
Seattle	3.35c
St. Louis	2.675c
St. Paul	2.76c
Los Angeles	3.50c
PLATES	
Boston, ¼-inch	2.705c
⅜-inch	2.875c
Buffalo	2.70c
Chicago	2.58c
Cincinnati	2.70c to 2.95c
Cleveland	2.51c
Detroit	2.68c
New York	2.68c
Philadelphia	2.65c
San Francisco	3.40c
Seattle	3.35c
St. Louis	2.675c
St. Paul	2.86c
Los Angeles	3.50c
NO. 10 BLUE ANNEALED SHEETS	
Boston, ⅛-inch	3.75c
Buffalo	3.60c
Chicago	3.63c
Cincinnati	2.60c to 2.85c
Cleveland	3.25c to 3.46c
Detroit	3.58c
New York	3.63c
Philadelphia	3.40c
San Francisco	4.50c
Seattle	4.65c
St. Louis	2.725c
St. Paul	3.91c
Los Angeles	4.70c
NO. 28 BLACK SHEETS	
Boston	4.90c
Buffalo	4.45c
Chicago	4.45c
Cincinnati	2.85c
Cleveland	4.00c
Detroit	4.38c
New York	4.35c
Philadelphia	4.25c
San Francisco	5.80c
Seattle	5.65c
St. Louis	4.45c
St. Paul	4.73c
Los Angeles	5.80c
NO. 28 GALVANIZED SHEETS	
Boston	5.90c
Buffalo	5.45c
Chicago	5.45c
Cincinnati	5.20c
Cleveland	5.00c
Detroit	5.38c
New York	5.35c
Philadelphia	5.25c
San Francisco	6.65c
Seattle	6.65c
St. Louis	5.45c
Los Angeles	6.65c
BANDS	
Boston	3.75c
Buffalo	3.20c
Chicago	3.23c
Cincinnati	3.35c to 3.60c
Cleveland	3.06c
Detroit	3.33c
New York	2.98c to 3.13c
Philadelphia	3.20c
San Francisco	4.05c
Seattle	4.00c
Los Angeles	4.30c
HOOPS	
Boston	4.25c
Buffalo	3.35c
Cleveland	3.06c
Detroit	3.48c
New York	3.63c
Philadelphia	3.45c
Seattle	4.75c
COLD ROLLED SHAFTING	
Boston (rounds)	3.30c to 3.50c
Buffalo	3.40c
Chicago	3.40c
Cincinnati (rounds)	3.35c to 3.45c
Detroit (rounds)	3.35c
New York	3.35c
New York (flats, squares and hexagons)	3.85c
Philadelphia (rounds)	3.20c
San Francisco	4.80c
Seattle	5.00c
Los Angeles	5.10c
Boston (flats, squares and hexagons)	3.90c to 4.00c



THE CONTINUOUS OPERATION OF A LARGE ANTHRACITE COAL BREAKER DEPENDS UPON THIS DRIVE

THIS 600 H. P. Link-Belt Silent Chain Drive operates the entire breaker of the St. Clair Coal Co., St. Clair, Pa.

A steam engine was originally used to drive it, but with the conversion to electricity the early part of 1919 this Link-Belt Silent Chain Drive was installed.

The use of rope or belt drives would have necessitated the building of an extension to the power house to accommodate the long center distances necessary for these forms of transmission.

Here is another example of the all-around reliability and dependable performance of Link-Belt Silent Chain. The operation of the entire plant depends upon it. The St. Clair Coal Co. are pleased with the results obtained. They tell us that not one cent has been spent for repairs since installed in 1919.

945

LINK-BELT COMPANY

PHILADELPHIA

New York . . . . . Woolworth Bldg.
Boston . . . . . 49 Federal St.
Pittsburgh . . . . . 1501 Park Bldg.
St. Louis . . . . . Central National Bank Bldg.
Buffalo . . . . . 547 Ellicott Square
Wilkes-Barre . . . . . 2nd National Bank Bldg.
Huntington, W. Va. . . . . Robeson-Prichard Bldg.
H. W. CALDWELL & SON CO., CHICAGO

CHICAGO

Cleveland . . . . . 439 Kirby Bldg.
Detroit . . . . . 4210 Woodward Ave.
Kansas City, Mo. . . . . 306 Elmhurst Bldg.
Seattle . . . . . 820 First Ave., S.
Portland, Ore. . . . . 101 First St.
San Francisco . . . . . 158 Second St.
Los Angeles . . . . . 163 N. Los Angeles St.
NEW YORK, Woolworth Bldg.

INDIANAPOLIS

Denver . . Lindroth, Shubart & Co., Boston Bldg.
Louisville, Ky. . . Frederick Wehle, Starks Bldg.
New Orleans . . C. O. Hine, 504 Carondelet Bldg.
Birmingham, Ala. S.L. Morrow, 720 Brown-Marx Bldg.
Charlotte, N. C. . . J. S. Cothran, Com'l Bank Bldg.
Canadian Link-Belt Co., Ltd. Toronto and Montreal
DALLAS, TEXAS, 709 Main St.

LINK-BELT

East of the Mississippi

(*Concluded from Page* 199)

Motor Co. at Thirty-eighth and Chestnut streets. It will be 72 x 138 feet in size, of brick and steel. The Federal Engineering Co., 444 Milwaukee street, has the general contract.

MILWAUKEE—The Bahoe Mfg. Co., 2521 Vine street, plans a manufacturing building, 1-story, 30 x 150 feet, to cost about $40,000.

MILWAUKEE—A charter has been granted to the Meyer Furnace & Supply Co., 170-174 Reed street. The capital stock is $50,000 and the incorporators are H. L. Jackson, Donald Howland and F. W. Giese. The company will manufacture and deal in heating devices and appliances.

NEENAH, WIS.—A garage costing about $45,000 will be erected at West North Water and North Commercial streets by the Jaeger-Wheeler Co.

STEVENS POINT, WIS.—The Bukolt Mfg. Co., manufacturing steel-shod protectors for automobile tires, will install additional machinery and later will erect an addition to handle several large jobbing orders it has booked. John J. Bulkolt is president and general manager.

WAUKESHA, WIS.—The Waukesha Foundry Co. plans a plant addition.

WAUPIN, WIS.—The C. A. Shaler Co., manufacturing vulcanizing machinery and automobile specialties, has let contracts to the Hutter Construction Co., Fond du Lac, Wis., for remaining buildings to make up its plant.

West of the Mississippi

FRESNO, CAL.—The Fresno Tire & Rubber Co., Mattei building, has awarded a contract for a plant at Selma, Cal.

SAN FRANCISO—The Doble Steam Motors Co., Call building, has acquired a site at Atascadero, Cal., on which it plans a plant for the manufacture of steam-driven automobiles.

DENVER—The machine shops of the Denver & Salt Lake railroad recently were damaged by fire.

IDAHO SPRINGS, COLO.—The Cycle Mining Co. has started work on the engine house for its compressor plant.

NEW ORLEANS, LA.—The Consumers Light & Power Co. has let a contract for the reconstruction of its plant.

KANSAS CITY, MO.—The Federal Cash Register Co. has been incorporated with $125,000 capital stock, by K. W. Leeds, R. A. Park and John Nyberg.

SAN ANTONIO, TEX.—The Saladiner Polishing Machine Co. has been incorporated with $10,000 capital stock, by J. M. Saladiner, J. O. Chapman and H. H. Rogers.

SAND SPRINGS, OKLA.—The Tulsa Stove & Foundry Co. plans a plant addition, 80 x 200 feet.

SPRINGFIELD, MO.—The Springfield Gas & Electric Co. plans a plant addition to cost $750,000.

ST. LOUIS—The Supreme Heater & Ventilatign Corp. has been chartered by V. E. Hugoniot, J. B. Yoch and Fred Wildermuth.

ST. LOUIS—The Atlas Iron Works has been incorporated with $50,000 capital stock, by W. C. Smith, O. B. Klein and H. W. Geiger.

ST. LOUIS—The St. Louis Electric Welding Co. has been incorporated by O. G. Koenig, F. A. Oberhellman and G. A. Lubeley.

ST. LOUIS—The Outasite Roller Screen Co. has been incorporated with $35,000 capital stock, by J. J. Maloney, C. E. Hamilton and J. C. Concannon.

ST. LOUIS—The Ottenad Plochman Mfg. Co., washing machines, has been incorporated with $10,000 capital stock, by L. A. Ottenad, E. D. Plochman and O. F. Karbe.

DALLAS, TEX.—Part of the power plant of the Dallas Power & Light Co. recently was damaged by fire. It will be rebuilt.

DENISON, TEX.—The Missouri, Kansas & Texas railroad has warded Bowie, Lydon & Co., Inc., Chicago, a contract to erect a freight terminal here at an estimated cost of $450,000.

SPOKANE—The Standard Disk Wheel Co. has been incorporated with $500,000 capital stock, by W. A. Clench, J. L. Miller and F. M. Richardson.

Business in Canada

ENDERBY, B. C.—The town council proposes to build an electric light plant here to cost $23,000.

VANCOUVER, B. C.—The Ideal Iron Works, 123 Powell street, will build a machine shop here.

LEASIDE, ONT.—Durant Motors of Canada, Ltd., plans to enlarge its plant.

OTTAWA, ONT.—The Dubilier Condenser & Radio Corp. of Canada, Ltd., has been incorporated to manufacture radio apparatus with $50,000 capital stock, by Otto S. Regan, James Porter and Harold M. Daly.

TORONTO, ONT.—Fuel Power Co., Ltd., has been incorporated to manufacture machinery, etc., with $1,000,000 capital stock, by Robert Wherry, William Zimmerman and Wendell H. Osborne.

TORONTO, ONT.—The Imperial Radiator Co., Ltd., has been incorporated to manufacture boilers, etc., with $500,000 capital stock, by William S. Morlock, Sydney E. Wedd, Cyril F. H. Carson, and others.

TORONTO, ONT.—E. L. Roxborough, Ltd., has been incorporated to manufacture and deal in electrical equipment with $40,000 capital stock, by Robert E. Grass, Harold W. Timmins, and others.

WELLAND, ONT.—Zero-Zone, Ltd., has been incorporated to manufacture refrigerating plants, etc., with $500,000 capital stock, by Byron A. Bascue, Buffalo, N. Y., Byron J. McCormick, Edward J. Anderson, and others.

New Trade Publications

VOLTMETER—The Esterline-Angus Co., Indianapolis, has published a 4-page folder in which a graphic voltmeter is described and illustrated. This is for either alternating or direct current service. In addition to this, a wattmeter, ohm meter, graphic speed recorder and other graphic instruments are described and illustrated.

MARKING EQUIPMENT—The Pannier Bros. Stamp Co., Pittsburgh, is circulating a 16-page illustrated booklet in which rubber stamping equipment for marking sheets, plates and structural material, is described and illustrated. The illustrations include specimens of the work done by these stamps, etc.

RUBBER STAMPS—Pannier Bros. Stamp Co., Pittsburgh, has published a 64-page illustrated booklet in which rubber stamps of all types and descriptions are described and illustrated. These include rubber stamps, self-inkers, daters and numberers, numbering machines, time stamps, inks, pads, racks, stencils, name plates, etc.

MOTOR TRUCKS—The Acme Motor Truck Co., Cadillac, Mich., is circulating a 40-page illustrated booklet in which motor trucks are described and illustrated. These trucks are made in seven models, with maximum capacities ranging from 2000 to 12,500 pounds. General specifications of the various models are given. The latter half of the booklet is devoted to describing and illustrating truck bodies.

STEAM TURBINE—The Allis-Chalmers Mfg. Co., Milwaukee, has published a 54-page illustrated booklet in which steam turbine and generator units are described and illustrated. These are of the noncondensing and condensing type with pressure operated by pass valve. They are adapted for sugar mills, refineries, saw mills, power and manufacturing plants, etc. The equipment is described in detail and the illustrations include numerous line drawings.

FUEL OIL SYSTEMS—A catalog consisting of three bulletins and describing mechanical fuel oil burning systems and fuel oil burners, in which the oil is atomized by low or high pressure air and steam, has been published by the Schutte & Koerting Co., Philadelphia. The catalog discusses thoroughly the installation, operation and maintenance of oil burning equipment, its characteristics, requirements and functions; the relative merits of mechanical and spray oil burners, design, purpose and operation of air control registers, oil pumping outfits, duplex oil strainers and fuel oil heaters; the general requirements of steam boiler furnaces for burning oil, operation, inspection of the system, lighting the fires, air for combustion, indication of satisfactory operation, number and arrangement of burners, effects of carbon deposits, soot, etc. It is profusely illustrated and contains more than 25 tables of important data compiled from authoritative sources.

PIPE TAG MARKER—The Pannier Bros. Stamp Co., Pittsburgh, has published a 4-page illustrated folder in which a pipe tag marker is described and illustrated. This instrument is used for embossing the total length of pipe in a bundle, in feet and inches, on metal tags used in the bundling rooms of pipe mills. It is made in two models. The first produces the entire embossing in one operation. The figures to be embossed are set by means of four levers. The first model has four figure wheels, three having the characters 1 to 0 for embossing the number of feet. The fourth wheel has figures from 1 to 11 to denote inches. The second model embosses one figure at a time. Operation of this model is simple. The dies, consisting of a dash line and figures 1 to 11, are arranged in a half circle and rotated by a handle. When the desired figure is in position the lever is pressed. This forces the two dies together embossing the figure on the tag. Upon the return motion of the lever to normal position the tag is advanced one space ready for the next figure.

STRONGER THAN CASTINGS

Motor Support
Forming a Casting

Any number of tests will prove that Parish and Bingham Pressed Steel Parts are far stronger than castings. Also, that they are far tougher than castings; also far less brittle, far lighter in weight, far more uniform in weight, far more uniform in shape, and finally, FAR CHEAPER. Furthermore, when you get them, they are completely finished—there is no machining whatever to do.

If you have nothing with which we can help you at present, get in touch with us when you have occasion to design new parts.

Parish & Bingham Engineers are specialists in designing suitable pressed steel substitutions for castings. MAY THEY HELP YOU?

Parish & Bingham Corporation

Builders of Automobile Frames and Steel Stampings

CLEVELAND, OHIO

P&B

PARISH & BINGHAM
Pressed Steel Parts

Iron and Steel Scrap Prices

CORRECTED TO TUESDAY NOON GROSS TONS DELIVERED TO CONSUMER

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	$13.50 to 14.50
Boston (dealers)	10.00 to 10.50
Buffalo	17.00
Chicago	15.00 to 15.50
Cincinnati	13.50 to 14.00
Cleveland	15.25 to 15.50
Detroit (dealers)	12.75 to 13.25
Eastern Pennsylvania	15.00 to 15.50
New York (dealers)	10.00 to 10.50
Pittsburgh	16.50 to 17.00
San Francisco	10.00
St. Louis	14.00 to 14.50
Valleys	17.50 to 17.75
No. 1 railroad steel New York (dealers)	11.00 to 11.50

BUNDLED SHEETS

Buffalo	$11.00 to 11.50
Cleveland (hydraulic)	13.00 to 13.25
Cincinnati	7.50 to 8.00
Eastern Pennsylvania	13.50 to 14.00
Pittsburgh	14.50 to 15.00
St. Louis	6.50 to 7.00
Valleys (hydraulic)	15.00 to 15.50

STEEL RAILS, SHORT

Birmingham	$14.00 to 15.50
Boston (dealers)	10.00 to 11.00
Chicago	17.00 to 17.50
Cincinnati	15.00 to 15.50
Cleveland	13.75 to 14.25
St. Louis	16.00 to 16.50

STOVE PLATE

Birmingham	$14.00 to 14.50
Boston (consumers)	13.00 to 13.50
Buffalo	15.00 to 15.50
Chicago	16.50 to 17.00
Cincinnati (net)	11.50 to 12.00
Cleveland	14.00 to 14.50
Detroit	11.50 to 12.00
Eastern Pennsylvania	14.50 to 15.00
New York	10.50 to 11.00
Pittsburgh	15.00 to 15.50
St. Louis	14.50 to 15.00

LOW PHOSPHORUS

Buffalo	$18.00 to 18.50
Cincinnati	18.00 to 18.50
Eastern Pennsylvania	19.00 to 21.00
Pitts. billet and bloom crops	21.00 to 21.50

SHOVELING STEEL

Chicago	$14.50 to 15.00
Pittsburgh	14.75 to 15.25
St. Louis	13.50 to 14.00

KNUCKLES, COUPLERS & SPRINGS

Chicago	$18.00 to 18.50
Eastern Pennsylvania	18.00 to 19.00
Pittsburgh	18.00 to 18.50
St. Louis	18.00 to 18.50

COMPRESSED SHEETS

Buffalo	$14.25 to 14.75
Chicago	12.50 to 13.00
Pittsburgh	15.25 to 15.75

FROGS, SWITCHES, GUARDS

Chicago	$15.00 to 15.50
Eastern Pennsylvania	15.00 to 15.50
St. Louis	15.00 to 15.50

BOILER PLATE, CUT

Detroit (dealers)	$8.00
St. Louis (dealers)	10.50 to 11.00

ANGLE BARS—STEEL

Chicago	$16.25 to 16.75
St. Louis	15.00 to 15.50

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham	$12.50 to 14.00
Boston (dealers)	11.00 to 12.00
Buffalo	15.00 to 16.00
Chicago, No. 1	15.25 to 15.75
Chicago, No. 2	15.00 to 15.50
Cincinnati, No. 1	13.00 to 13.50
Cleveland, No. 1	12.00 to 12.25
Eastern Pennsylvania, No. 1	18.00 to 18.50
Pittsburgh, No. 1	15.00 to 15.50
Pittsburgh, No. 2	16.50 to 17.00
New York, No. 1 (dealers)	13.50 to 14.00
St. Louis, No. 1	14.50 to 15.00
St. Louis, No. 2	13.50 to 14.00

WROUGHT PIPE

Boston (dealers)	$7.50 to 8.00
Buffalo	12.00 to 12.50
Eastern Pennsylvania	13.50 to 14.00
New York (dealers)	9.25 to 9.50

YARD WROUGHT

Boston	$9.00 to 10.00
Eastern Pennsylvania, No. 1	15.00 to 16.00

CITY WROUGHT

New York, long	$10.75 to 11.25

BUSHELING

Buffalo, No. 1	15.00 to 15.50
Chicago, No. 1	13.00 to 13.50
Chicago, No. 2	7.50 to 8.00
Cincinnati, No. 1	11.00 to 11.50
Cleveland, No. 1	11.00 to 11.25
Cleveland, No. 2	9.00 to 9.50
Eastern Pennsylvania, No. 1	14.50 to 15.00
Pittsburgh, No. 1	13.50 to 14.00
St. Louis, No. 1	12.00 to 12.50
Detroit, No. 1	10.50 to 11.00

MACHINE SHOP TURNINGS

Birmingham	$6.00 to 6.50
Boston (dealers)	8.75 to 9.00
Buffalo	11.00 to 12.00
Chicago	9.00 to 9.50
Cincinnati (net)	7.50 to 8.00
Cleveland	11.75 to 12.00
Detroit (dealers)	8.75 to 9.25
Eastern Pennsylvania	13.50 to 14.00
New York (dealers)	9.50 to 10.00
Pittsburgh	13.50 to 14.00
St. Louis	7.50 to 8.00
Valleys	12.00 to 12.50

CAST IRON BORINGS

Birmingham (chemical)	$13.40 to 14.00
Birmingham, borings (plain)	6.00 to 7.00
Boston (chemical)	10.50 to 11.00
Boston (dealers)	8.75 to 9.00
Buffalo	13.50 to 14.00
Chicago	12.00 to 12.50
Cincinnati (net)	8.00 to 8.50
Cleveland	12.75 to 13.00
Detroit (dealers)	10.75 to 11.25
Eastern Pennsylvania	13.50 to 14.00
Eastern Pennsylvania (chemical)	16.00 to 17.00
Pittsburgh	15.50 to 16.00
New York (dealers' price)	9.50 to 10.00
St. Louis	10.00 to 10.50
Valleys	14.25 to 14.75

MIXED BORINGS AND TURNINGS
(For blast furnace use)

Boston (dealers)	$8.75 to 9.00
Cleveland	12.25 to 12.50
Eastern Pennsylvania	13.00 to 13.50
New York (dealers)	9.50 to 10.00

IRON AXLES

Birmingham	$14.00 to 15.50
Boston	$20.00 to 21.00
Buffalo	23.00
Chicago	25.00 to 25.50
Cincinnati	19.50 to 20.00
Detroit	20.00
Eastern Pennsylvania	28.00 to 30.00
New York (dealers)	20.00 to 21.50
Pittsburgh	24.00 to 25.00
St. Louis	25.50 to 26.00

IRON RAILS

Buffalo	$16.00 to 17.00
Chicago	17.50 to 18.00
Cincinnati	13.50 to 14.00
Cleveland	14.00 to 14.50
St. Louis	16.50 to 17.00

PIPES AND FLUES

Chicago	$11.00 to 11.50
Cincinnati	7.00 to 7.50
Cleveland	11.00 to 11.50
St. Louis	9.00 to 9.50

RAILROAD GRATE BARS

Buffalo	$14.00 to 14.50
Chicago	15.00 to 15.50
Cleveland	14.00 to 14.50
Eastern Pennsylvania	14.50 to 15.00
New York (dealers)	10.00 to 10.50
St. Louis	14.50 to 15.00

FORGE FLASHINGS

Boston (dealers)	$8.00 to 8.50
Chicago, small	10.25 to 10.75
Cleveland, small	11.25 to 11.75
Cleveland, large	11.25 to 11.75
Detroit (dealers)	9.50 to 10.00

FORGE SCRAP

Boston	$7.75 to 8.25
Chicago	15.00 to 15.50
Eastern Pennsylvania, No. 1	13.00 to 13.50

ARCH BARS AND TRANSOMS

Chicago	20.00 to 21.00
St. Louis	20.00 to 21.00

ANGLE BARS—IRON

Chicago	$19.50 to 20.00
St. Louis	17.50 to 18.00

Iron and Steel Works Scrap

AXLE TURNINGS

Boston (dealers)	$8.50 to 9.00
Buffalo	15.00 to 15.50
Chicago	13.00 to 13.50
Cleveland	12.75 to 13.00
Detroit	11.50 to 12.00
Eastern Pennsylvania	13.00 to 14.00
Pittsburgh	15.00 to 15.50
St. Louis	11.50 to 12.00

STEEL CAR AXLES

Birmingham	$14.00 to 15.50
Boston (dealers)	15.50 to 16.00
Buffalo	18.00 to 19.00
Chicago	17.50 to 18.00
Cleveland	17.00 to 17.25
Eastern Pennsylvania	22.00 to 23.00
New York (dealers)	15.00 to 18.00
Pittsburgh	16.00 to 16.50
St. Louis	18.50 to 19.00

SHAFTING

Boston (dealers)	$15.00 to 16.00
Chicago	20.00 to 20.50
Eastern Pennsylvania	19.50 to 20.00
New York (dealers)	15.00 to 16.00
St. Louis	16.75 to 17.25

Iron Foundry Scrap

CAR WHEELS

Birmingham iron	$13.50 to 15.00
Birmingham, tram car	14.00 to 15.50
Boston (consumers)	18.00 to 18.50
Buffalo, iron	17.50 to 18.00
Chicago, iron	19.00 to 19.50
Cincinnati	14.50 to 15.00
Cleveland, iron	13.00 to 13.50
Detroit	14.50
Eastern Pennsylvania, iron	18.50 to 19.00
New York, iron (dealers)	14.00 to 15.00
Pittsburgh, iron	18.50 to 19.00
Pittsburgh, steel	18.00 to 18.50
St. Louis, iron	18.50 to 19.00

NO. 1 CAST SCRAP

Birmingham, cupola	$14.50 to 15.50
Boston (consumers)	18.50 to 19.00
Buffalo	17.00 to 17.50
Chicago, cupola	17.50 to 18.00
Cincinnati, No. 1, machinery, cupola (net)	15.50 to 16.00
Cleveland, cupola	17.00 to 17.50
Eastern Pennsylvania, cupola	18.00 to 20.00
New York, cupola (dealers)	15.50 to 16.00
Pittsburgh, cupola	19.00 to 19.50
San Francisco	23.00 to 24.00
St. Louis, agricultural	18.00 to 18.50
St. Louis, railroad	17.75 to 18.25
Valleys	18.00 to 18.50
Detroit, machinery (net)	15.50 to 16.00

HEAVY CAST

Boston (consumers)	$17.00 to 18.00
Buffalo	16.00 to 16.50
Cleveland	14.75 to 15.00
Eastern Pennsylvania	17.50 to 18.00
New York (dealers)	14.50 to 15.00
Pittsburgh	18.00 to 18.50
Detroit, automobile (net)	19.00 to 19.50

MALLEABLE

Boston (railroad)	$14.00 to 15.00
Buffalo	17.00 to 17.50
Chicago, railroad	17.25 to 17.75
Chicago, agricultural	17.25 to 17.75
Cincinnati, agricultural	12.00 to 12.50
Cincinnati, railroad	12.00 to 12.50
Cleveland, agricultural	12.50 to 13.00
Cleveland, railroad	15.25 to 15.50
Detroit	14.00
Eastern Pennsylvania, railroad	13.00 to 14.00
Pittsburgh, railroad	16.00 to 16.50
Pittsburgh, agricultural	13.00 to 13.50
St. Louis, agricultural	14.75 to 15.25
St. Louis, railroad	14.50 to 15.00

Miscellaneous Scrap

REROLLING RAILS
5 feet and over

Birmingham	$14.00 to 15.50
Boston (dealers)	11.50 to 12.00
Chicago	16.00 to 16.50
Cleveland	16.00 to 16.50
Detroit (dealers)	11.50 to 12.00
Eastern Pennsylvania	17.00 to 17.50
New York (dealers)	13.50 to 14.50
Pittsburgh district	17.50 to 18.00
St. Louis	15.25 to 15.75

LOCOMOTIVE TIRES

Chicago	$13.00 to 13.50
St. Louis	13.00 to 13.50

LOW PHOSPHORUS PUNCHINGS

Chicago	$17.00 to 17.50
Eastern Pennsylvania	18.00 to 20.00
Pittsburgh	18.00 to 18.50

Are You Looking Ahead?

Before you start searching for that job, a little thought about what the Employer is thinking about would help a great deal.

The best man he can get for his money is not altogether what he is seeking. His big idea is to fill the job with such a man that, if it is ever going to be vacant again, promotion will be the reason.

It is a rank waste of time to place a man in a "blind alley" job when he is looking for a future.

Business in the metalworking trades is rapidly improving and the executives who read THE IRON TRADE REVIEW have begun to seek men who look ahead of the particular job they are qualified to fill.

The Help and Positions Wanted columns of THE IRON TRADE REVIEW are continually referred to by Employers when they have vacancies, for they know the type of men that can be reached there.

If you are seeking a position we believe the time is now propitious to get before the Employers who want the kind of experience and "get there" ability you have.

Your ad in the "Positions Wanted" columns of the Employment section of the next two or three issues will help.

See the Help and Positions Wanted ads on page 90

Composite Market Record

Monthly Averages of Fourteen Iron and Steel Products, 1913-1922, Compiled by The Iron Trade Review

1922	
July 12	$37.45
July 5	37.43
Average for June	36.96
June 28	37.26
June 21	37.12
June 14	36.74
June 7	36.72
May	36.49
April	34.42
March	32.97
February	32.86
January	33.35
1921	
December	33.99
November	34.71
October	35.46
September	35.34
August	35.99
July	38.14
June	41.87
May	43.32
April	43.84
March	45.37
February	48.81
January	51.98
Average for year	40.74
1920	
December	54.04
November	63.75
October	$68.61
September	69.28
August	68.93
July	68.29
June	67.89
May	68.26
April	67.49
March	65.47
February	65.63
January	59.40
Average for year	65.59
1919	
December	54.88
November	51.28
October	48.76
September	48.35
August	48.27
July	47.86
June	47.88
May	48.29
April	48.45
March	52.28
February	53.71
January	53.81
Average for year	50.32
1918	
December	57.24
November	55.67
October	57.53
September	$56.56
August	56.67
July	56.66
June	56.62
May	56.59
April	56.59
March	56.71
February	56.67
January	56.67
Average for year	56.68
1917	
December	56.68
November	58.29
October	67.75
September	83.18
August	89.69
July	89.56
June	82.66
May	73.96
April	66.48
March	61.07
February	56.76
January	55.10
Average for year	70.10
1916	
December	53.68
November	46.77
October	41.50
September	39.97
August	$39.67
July	38.37
June	39.63
May	39.78
April	39.13
March	37.18
February	35.63
January	33.66
Average for year	40.50
1915	
December	31.56
November	28.64
October	26.19
September	25.55
August	24.77
July	24.25
June	23.74
May	22.89
April	22.66
March	22.71
February	22.21
January	21.90
Average for year	24.76
1914	
December	21.58
November	23.39
October	$22.84
September	23.17
August	22.72
July	22.17
June	22.58
May	22.99
April	23.39
March	23.60
February	23.52
January	23.03
Average for year	22.92
1913	
December	23.29
November	24.02
October	24.91
September	25.55
August	25.97
July	26.34
June	26.78
May	27.34
April	27.74
March	27.93
February	28.35
January	27.96
Average for year	26.32

Iron and Steel Statistics

Tin Plate Production

Year	Tin plate Tons	Terne plate Tons	Total Tons
1908	524,448	77,090	601,538
1909	589,929	95,465	685,394
1910	725,411	84,092	809,503
1911	798,814	79,221	878,035
1912	982,830	95,698	1,078,528
1913	854,093	68,472	922,565
1914	969,892	73,098	1,042,990
1915	1,100,913	81,735	1,182,648
1916	1,276,113	107,088	1,383,201
1917	1,616,658	76,946	1,693,604
1918	1,608,124	42,689	1,650,813
1919	1,203,579	85,427	1,289,006
1920	1,539,977	69,112	1,609,089
1921	837,660	50,721	888,381

Sheet Production

Year	Tons
1913	1,921,001
1914	1,668,644
1915	2,106,298
1916	2,492,794
1917	2,595,606
1918	2,176,537
1919	2,316,057
1920	3,133,217
1921	1,713,288

Plate Production

Year	Sheared Tons	Universal Tons	Total Tons
1913	1,844,354	1,158,416	3,002,770
1914	1,346,308	766,133	2,112,441
1915	1,923,199	954,852	2,878,051
1916	2,453,150	1,224,234	3,677,384
1917	2,963,039	1,195,199	4,158,238
1918	3,885,126	1,234,782	5,119,908
1919	2,899,967	992,054	3,892,021
1920	3,505,364	1,249,769	4,755,133
1921	1,189,714	570,610	1,760,324

Shape Production

Year	Gross tons
1908	1,083,181
1909	2,275,562
1910	2,266,890
1911	1,912,367
1912	2,846,487
1913	3,004,972
1914	2,031,124
1915	2,437,003
1916	3,029,964
1917	3,110,000
1918	2,849,969
1919	2,614,036
1920	3,306,748
1921	1,272,624

Bar Production

Gross Tons

Year	Iron Tons	Steel Tons	Total Tons
1908	685,233	1,301,405	1,986,638
1909	952,230	2,311,301	3,263,531
1910	1,074,163	2,711,568	3,785,731
1911	835,625	2,211,737	3,047,362
1912	944,790	2,752,324	3,697,114
1913	1,026,632	2,930,977	3,957,609
1914	563,171	1,960,460	2,523,631
1915	657,107	3,474,135	4,131,242
1916	993,948	5,236,354	6,230,302
1917	983,926	5,226,031	6,209,957
1918	846,898	5,395,851	6,242,749
1919	446,549	3,945,075	4,391,624
1920	663,032	5,467,208	6,130,240
1921	198,324	1,367,430	1,565,754

Tube Production

	Iron	Steel	Total
1913	276,067	1,969,465	2,245,532
1914	212,147	1,525,557	1,737,704
1915	206,513	1,713,161	1,919,674
1916	278,117	2,372,941	2,651,058
1917	273,890	2,213,087	2,486,977
1918	202,958	2,087,521	2,290,479
1919	162,356	2,212,575	2,374,931
1920	199,673	2,803,052	3,002,725
1921	110,293	1,877,149	1,987,442

Steel Rail Production

Year	Tons
1908	1,920,944
1909	3,023,845
1910	3,635,801
1911	2,822,556
1912	3,327,915
1913	3,502,780
1914	1,945,095
1915	2,204,203
1916	2,854,518
1917	2,944,161
1918	2,540,892
1919	2,203,843
1920	2,604,116
1921	2,178,818

Iron and Steel Freight Rates

Pig Iron

Mahoning and Shenango valleys to:	
Cleveland	$1.76
Newark, N. J.	6.05
Boston	6.55
Philadelphia	5.67
Pittsburgh	1.76
Chicago	4.79
St. Louis	5.80
Minneapolis, St. Paul	6.84
Buffalo to:	
Albany, N. Y.	$2.27
New England (rail)	4.91
New York and Brooklyn (rail)	4.91
Philadelphia	4.91
Rochester	1.39
Virginia furnaces to:	
Philadelphia	$5.17
New England	5.92
Brooklyn, Jersey City, Newark	5.54
Birmingham, Ala., to:	
Boston (rail)	$9.61
Boston (rail and water)	6.91
Cincinnati	4.05
Chicago	6.00
Cleveland	6.00
Louisville, Ky.	3.72
Minneapolis, St. Paul	8.76
New York	9.24
Philadelphia (rail)	7.81
Philadelphia (rail and water)	6.67
Pittsburgh	6.84
St. Louis	5.17
Seattle	20.16
Chicago to:	
Des Moines	$4.26
Minneapolis, St. Paul	3.04
Milwaukee	0.76
Moline, Ill.	1.77
Omaha	5.47
St. Louis	2.16
Ironton and Jackson, O., to:	
Chicago	$4.79
Cincinnati	2.27
Cleveland	3.02
Detroit	3.28
Indianapolis	2.90
Minneapolis, St. Paul	7.56

Finished Material

Pittsburgh, carloads, per 100 pounds, to:	
New York	$0.34
Philadelphia	0.325
Baltimore	0.315
Boston	0.365
Buffalo	0.265
Cleveland	0.215c
Cincinnati	0.29
Chicago	0.34
Detroit	0.29
Minneapolis and St. Paul	0.60
Kansas City	0.735
Denver	1.19
St. Louis	0.425
New Orleans	0.46
Birmingham	0.69
Pacific coast (all rail)	1.495
Pacific coast (tin plate)	1.495